The GEO Quarterly

Group for Earth Observation

The Independent Amateur Quarterly Publication for Earth Observation and Weather Satellite Enthusiasts

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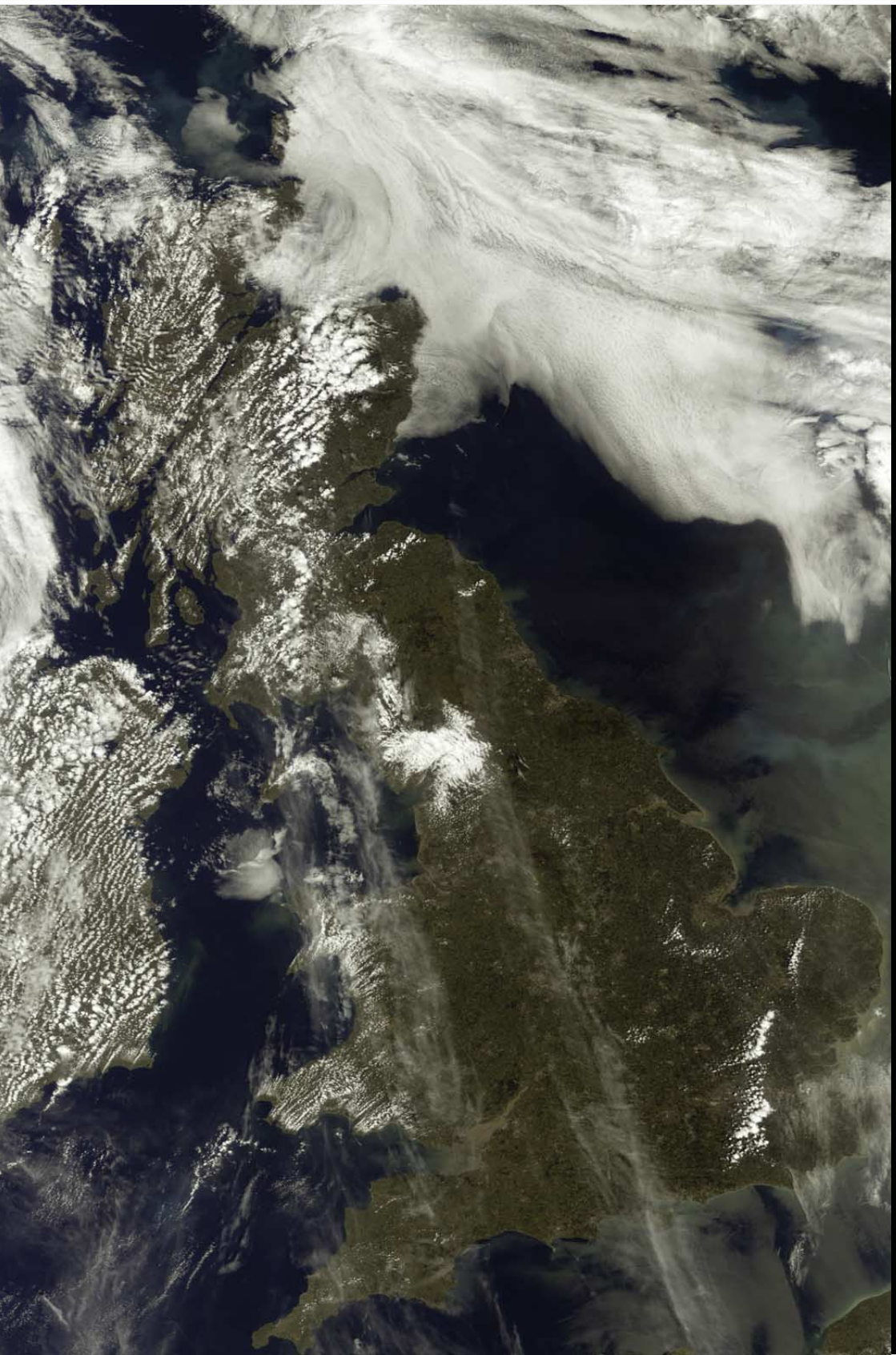

Inside this issue . . .

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Deadly French Flash Floods, Rob Denton reports

Robert Moore looks at The Perfect Front

Enrico Gobbetti shows us his receiving station

First steps in setting up an APT receiving station, a must read for new members with Les Hamilton

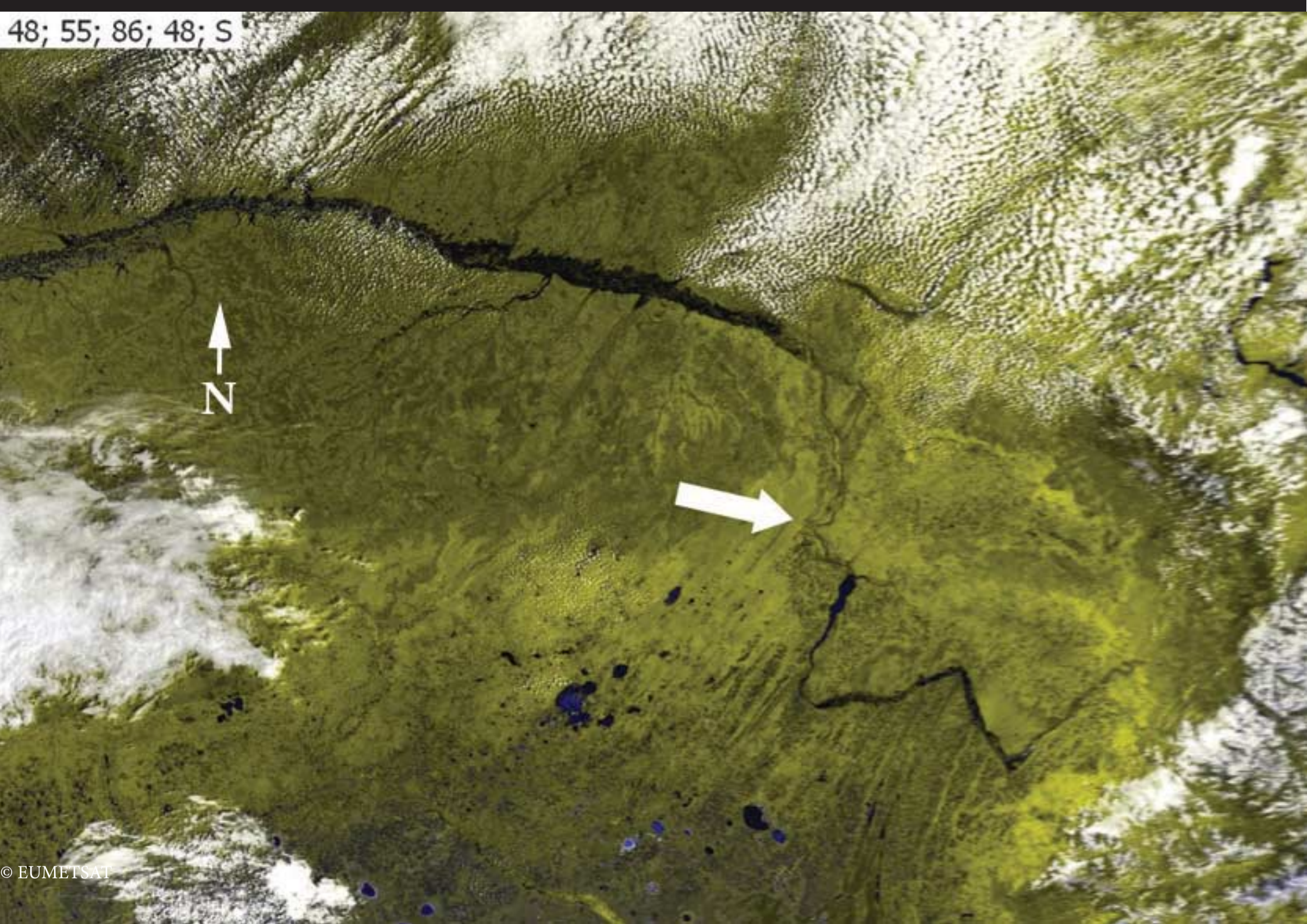
Stunning full colour centrefold of Florida from an ENVISAT image courtesy of Arne van Belle

Will Lake Eyre refill? An update from Ken Morgan

Douglas Deans continues his in-depth look at the EUMETCast channels

Now double the number of colour pages

Plus much more ...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The ***GEO*** *Quarterly*

September 2010

Editorial: Peter Green

Since the last Quarterly I have made some changes, some more obvious than others. This issue sees us move to a new printer. Giving us the opportunity to bring you over double the number of colour pages on higher quality recycled paper using vegetable and soya based inks and saving GEO money. We are also using this company for part of our distribution, again with a view to saving money. I hope you like the new look.

This is also the first issue with a colour centrefold, this stunning image of Florida was too good not really show off our new colour pages, thanks Arne.

Work has already started on Q28, Les Hamilton has a very interesting article in production and will take full advantage of our new colour pages, but the Management Team cannot generate all the copy for the magazine, we need you to guide us with your contributions. I am also very pleased to inform you that Les has volunteered to continue to assist me by becoming Assistant Editor, since stepping down as editor he has continued to give me help and guidance, this recognises his valued contributions.

Along with the paper copy of Q28 I would like to produce for you an interactive magazine on your computer (probably biting off more than I can chew here). This would look like the paper copy but would have video/animations/audio embedded in it with live web links. The inspiration for this comes initially from Terence Smith's article in GEO Q17, 'GeoSatSignal Animations with Meteorological Chart Overlays'. This detailed and informative article when followed gave super results, but it would have been even more impressive to be able to see what was possible by a click of the mouse, also from the very detailed, informative and enjoyable presentations given by Ferdinand Valk at the Symposium last year. He used an interactive PDF which contained numerous animations to enhance and explain his subject. I would like to try and bring you a flavour of this. Recently Alan Banks made available a very impressive animation of thunderheads, which David Taylor then worked on to bring down the file size with no loss of quality. This type of collaboration and subject would make an excellent article for your interactive Quarterly and would contain the animation. There are so many uses for our group, but we need your input.

So, if you are interested in this, how about writing an article that can take full advantage of the technology? How would you like the interactive edition delivered or would you like to go and download from a website? Please let me know.

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The GEO Report

Francis Bell

My first note in this report must relate to receiving members' communications from around the world; many via email but some by telephone or post. It is very rewarding to receive this supportive feedback. Some of these communications are published in this Quarterly. It is worthy of note that not all of our members are connected to the Internet so I was very pleased to see the NOAA APT prediction table back in our last Quarterly. Our thank to Les Hamilton for compiling this table with its predictions in response to membership feedback.

It is also worth noting that interest is shown in our group beyond the existing membership. In the last few months we have had enquiries from commercial firms as contractors to the UK MOD, a company in Iraq working on behalf of the USA government and a direct enquiry from the French Space Agency CNES. It is flattering to think such firms and agencies are sufficiently aware of GEO that they make enquiries about our equipment and services. I certainly exclude myself from this comment but there is within our membership enormous talent and this is reflected in our publication, shop, web site and user forums.

Membership

This is my usual request for you to renew your membership on time. We do have new members joining GEO but this is balanced by an equivalent number not renewing. I know for certain this is often by default, people just forget or put the reminder slip to one side with the intention of dealing with it later - but don't ! The membership subscription for the UK is only £20 a little more for overseas to cover postage. For the quality of our printed Quarterly and other support within the group this must be the best value for £20 that anybody can spend in a year. If you can encourage any friend, colleague or institution to join our group that would be great. Here comes the warning: although GEO's management team are addressing the issue membership income does not quite cover the costs of printing and distributing our Quarterly !

On a more positive note the response to my requests in the last Quarterly had encouraging replies. I asked if anybody would be willing to take over the role of international liaison. A long standing member Rob Denton has volunteered to undertake this role. We are still working on the fine detail of the aims and objectives of the role. Someone able to give a regular report on the status of the weather satellites that interest many of us was another request. Again a positive response from an established member John Rivitt. The format and layout of this status page is being actively progressed. My thanks to Rob and John for volunteering for these two roles.

AMSAT-UK

Supported by David Simmons, I recently gave a talk to the AMSAT-UK colloquium in Guildford about ENVISAT reception via the Envi-Ham project. I will write a report about this in the next Quarterly. In the meantime an excellent video is available from the BATC website that shows my presentation 'GEO & ENVISAT'. I would like to thank the BATC for making this video available.

www.batc.tv/channel.php select the 2010 AMSAT GEO ENVISAT video from the drop down menu.

Coming events

The Royal Meteorological Society is organising their first National Amateur Observers Symposium at Reading University 4th and 5th September 2010. I will be giving a presentation about home reception of satellite data / images on the first day of the meeting. I will write a report about this new organisation and their first symposium in our next Quarterly. For details of the meeting visit the web site **www.rmets.org** events or after the symposium has taken place visit the same site for their reports.

The Lincoln Short Wave Club in association with the Radio Society of Great Britain RSGB are holding their second 'National HamFest' on the Newark Showground 1st and 2nd October 2010. This two day event is certainly worth visiting. Last year GEO attended and we were allocated a large stand where we ran live EUMETCast imaging on both days. We had hundreds of visitors to the stand and a worthwhile number of new members joined on the spot. I recommend that you visit this meeting if you can. GEO hope to be there again this year. The program of events is available from:

www.g5fz.co.uk

GEO at the Newbury Rally

Regular readers will have seen the 'Stop Press' notice in our last Quarterly relating to the Newbury Radio Rally. By invitation and accompanied by David Simmons, GEO attended this rally with an exhibition stand. Although a well established event this was the first time I had attended. I was encouraged by conversations with radio amateur radio friends, particularly my contacts with friends at the Guildford UHF repeater group who told me the Newbury rally was popular and worthwhile event. The venue was on the Newbury Show Ground which is conveniently located close to Junction 13 on the M4, this particular event being located on an open grassed area. I have been to many rallies before but this was the first outdoor event where I had tried to run a GEO exhibition stand with live weather satellite reception in a field, although I have done something similar before at radio club events.

As some form of protection I took my gazebo which was duly erected on site in spite of the wind. Alignment of the 60 cm dish was achieved on a grass surface and a EUMETCast signal fed into David's laptop. By the opening time of the show we were ready for visitors. I didn't try to count the number of visitors we had during the day but a few hundred would be my guess. Nearly all expressed some interest in what we were doing and new memberships were taken on the spot, together with promises from others who said they would send their applications directly to our membership secretary. In anticipation of new members on the day I had prepared packs containing some past issues of GEO Quarterly together with a EUMETSAT MSG CD. During the course of the day all of these packs were distributed to stand visitors.

Both David and I thought the whole day was worthwhile and would consider returning next year.

Even under a gazebo to view a laptop screen in the open with adjacent sunshine is difficult: plus the slightest breeze will randomly distribute GEO literature across the site. Next year perhaps I will take my large family tent with a darkened corner for viewing a computer screen.

My thanks to the organisers for inviting GEO to their rally and also to thanks to David Simmons who accompanied me and resourcefully ran his EUMETCast system all day from a 12V battery supply. He had specifically brought an interface to provide 9V to power the DVB World receiver and another interface to provide 18V to his laptop. I will buy similar interfaces myself as a convenient alternative to my noisy 230V mains generator which I sometimes take to operations in the field.

The GEO exhibition area at the Newbury Rally. On the left Francis Bell with visitors, David Simmons third left. The live dish and computer are almost masked by people. Some other parts of the rally are just visible in the background. Photograph by Paul Le Feuvre

Cover and Full Page Images

Front Cover

This ENVISAT 15MB image was received and processed by Arne van Belle and shows UK Full resolution (260x290m pixel size) image 2010 06 22 10:56 UTC as received over ENVISAT-DDS and processed using BEAM-Visat.

© ESA

Inside Front Cover

Western Siberia from Metop-A Occasionally when the clouds clear satellite imagery enables us to see places that we are not likely to visit. On 17th June the sky cleared over western Siberia enabling us to see the plains, mountains and the might Ob river/ The Ob flows west and north west before turning north to the Arctic Ocean. The city of Novosibirsk, the third largest city in Russia, is marked with an arrow. Parts of the Irtysh River may be seen in the gaps in the cloud to the south west of the image. The Irtysh flows into the Ob and the combined length of the two rivers makes them the longest river system in Russia, at 5,410 kilometres (3,600 miles).

© EUMETSAT

Page 7

This is a NOAA 18 HRPT images received by Jordi Mas Bonet a GEO member who lives in Barcelona and the satellite pass must have been very close to overhead when it was received.

©NOAA

Page 15

"Edinburgh reached its warmest ever May day (25C) on 2010-05-22 This NOAA-19 data (collected via the EUMETCast system) was from the 1312 pass, and shows that much of the UK and north-western Europe was also enjoying splendid weather due to a favourable placed anticyclone. It was matched by 25C the next day, when the Edinburgh Marathon was run. Not the best choice of weather for the runners, though!"

© NOAA

Centre Spread

This stunning image of Florida was received from ENVISAT and processed by Arne van Belle on 1st April 2010

©ENVISAT

Inside Back Cover

Top Image, Virtual Ocean Enhanced map view of the North East Atlantic, over layered with a bathemetric contour map, Earthquake data and added 3D projection, thanks to David Painter.

Lower Image, Showing circulating currents generated by water flow through Strait of Gibraltar, night-time (0158) Infra-red from NOAA 19 processed by David Painter on 27th July 2010

© NOAA

Back cover

Image of the solar transit of the International Space Station (ISS) and Space Shuttle Atlantis during the STS-132 mission, taken from Niederbipp in Switzerland on May 22nd 2010 at 13h 14min 09s UT. Transit forecast calculated by:

www.calsky.com

Transit duration: 0.49s. ISS distance to observer: 390 km. Speed in orbit: 7.4km/s (26500 km/h or 16500 mph). Takahashi TOA-150 refractor (diameter 150mm, final focal 2500mm), Baader Herschel prism and Canon 5D Mark II. Exposure of 1/8000s at 100 ISO, extracted from a series of 16 images (4 images/s) started 2s before the predicted time. Our thanks to Thierry Legault for permission to print this image.

http://www.astrophoto.fr/

The Northern Lights

Winter Cruising in Northern Norway

David Taylor

Spectacular images from the land of the trolls! Well, we all hear about the Northern Lights, and perhaps those living in the north of Scotland may even have seen Northern Lights on a semi-regular basis, but they are not a familiar site over much of Europe and the UK. I had always wanted to see them properly, as the movies you sometimes see on TV are speeded up. On a couple of occasions that they have been visible from Edinburgh they have been almost too weak to make out. Another ambition of mine has been to experience—at least in a limited and controlled way—the short winter days of northern Scandinavia.

Our trip was triggered by a brochure from the Cambridge Alumni dropping through the door, as it does every year. Although the trips on offer are always very tempting, they are mostly too long in duration, too expensive, or to somewhere I would find too hot these days! What a fussy person! But last year's brochure did start with a tempter—a trip to see the Northern Lights while travelling on one of the magnificent Norwegian *Coastal Voyage* vessels; in fact, on my favourite one, the MS Trollfjord. This was just too good an opportunity to miss (figure 1) - look how dark it already is at 4:15 on a mid-February afternoon!

Essentially, the trip was from Tromsø, sailing northeast then southeast towards the Russian border at Kirkenes, then back again, spending three nights aboard ship and concluding with two nights in Tromsø. You can see the outbound journey plotted as a yellow track on the map (figure 2).

There is an interactive map on my website

http://www.satsignal.eu/Hols/2010/NorthernNorway/route.html

with the full outbound track as measured by my GPS, which worked well on board the ship when placed near the cabin porthole.

Auroras occur in both hemispheres, generally around the poles, and are called the Aurora Borealis (or Northern Lights) and Aurora Australis (Southern Lights). These aurorae are caused by an interaction between high-energy particles from the sun—channelled by the magnetic field of the Earth—and the upper layers of the Earth's atmosphere. The colour of the emitted light depends on whether an oxygen or nitrogen atom or molecule has been hit. As I understand that a fuller technical article on the aurora is due in the next *GEO Quarterly*, I'll leave my description at that.

The Hurtigruten fleet are very helpful in making sure that you miss as little as possible, so one of the options is to leave your cabin intercom turned on overnight and they will announce anything of special interest. In Antarctica we got used to 'Whale off the port side', but here we were all waiting for the 'Northern lights expected' announcement! Soon after the first announcement, a group appeared on deck, warmly clad against the bitterly cold weather and the wind; they are shown out on deck waiting for the Lights in figure 3.
Once the aurora commenced, the Captain turned off most of the bright deck lights and the fun began. Our group leaders were keen to show us as many objects as they could in the night sky. I had wondered whether my eyes were less sensitive than when I was younger as I hadn't seen the Milky Way for ages. But in that clear, cold northern air there it was again. Many people lost count of how many more than 'seven' of the Pleiades (the seven sisters) they could see!

Our best night for aurora was on our southward journey, when just north of Tromsø. Although we were all packed and ready to disembark, we were treated on that final evening to a truly spectacular display. It was all I had hoped for and more.

Photographing the Aurora

Being keen on photography, I wanted to take pictures of any aurora we saw, and possessing a DSLR which produces reasonable images at ISO 3200 I thought there would be a chance. As we were to be on a moving ship rather than fixed land, a tripod seemed not to be required, though on reflection I think that was a mistake. What I did realise was that the 'kit' lenses and others which I had for my camera all had a relatively small maximum aperture (f/4.5 for example), which admitted les light than a typical 'prime' lens: getting enough light would be critical for this task.

I therefore bought a relatively low-cost (for *Nikon*) lens—the compact 35mm f1.8. This now allowed the camera to collect about six times as much light, and what would have been a difficult-to-hold one second shot now became a reasonable sixth of a second, much easier to hand-hold. In fact, as the brightness of the aurora varied, I was using exposures between about 0.1 and 2 seconds—all hand-held. I really was missing that tripod!

What I had not expected from my camera was that the aurora would be bright enough to be captured real-time, in movie mode. On my website there are a couple of videos captured with the Nikon D5000 DSLR using the 35mm f/1.8 lens. The ISO was set to 3200 and the video contrast increased to 200% in post-processing, making the effective ISO 6400, hence the grain (noise) in the image. The camera was again hand-held, hence the image moving a lot more than I would like! The only purpose of these videos is to show how rapidly the Lights can change.

Figures 4 through 7 show images of the Northern Lights photographed near Tromsø.

Worth doing? Very much so! Yes, it was cold, and even difficult to stand up because of the wind at the North Cape (but the excursion still went ahead, despite a near blizzard). We enjoyed excellent food and service on board ship and an enjoyable husky dog ride in Tromsø to finish our holiday.

Figure 1 - Our ship, the MS Trollfjord.

Figure 2 - The cruise (yellow track on map)

Figure 3 - Passengers out on deck waiting for the lights

Figure 4 - Aurora photographed near Tromsø

Figure 5 - The Aurora twists and turns in the sky

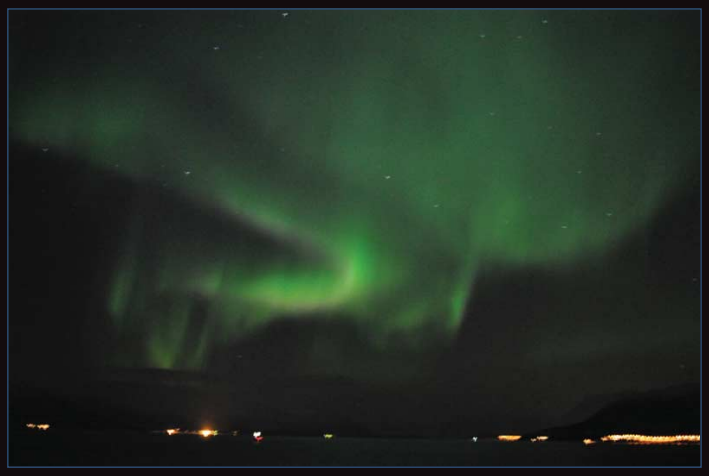
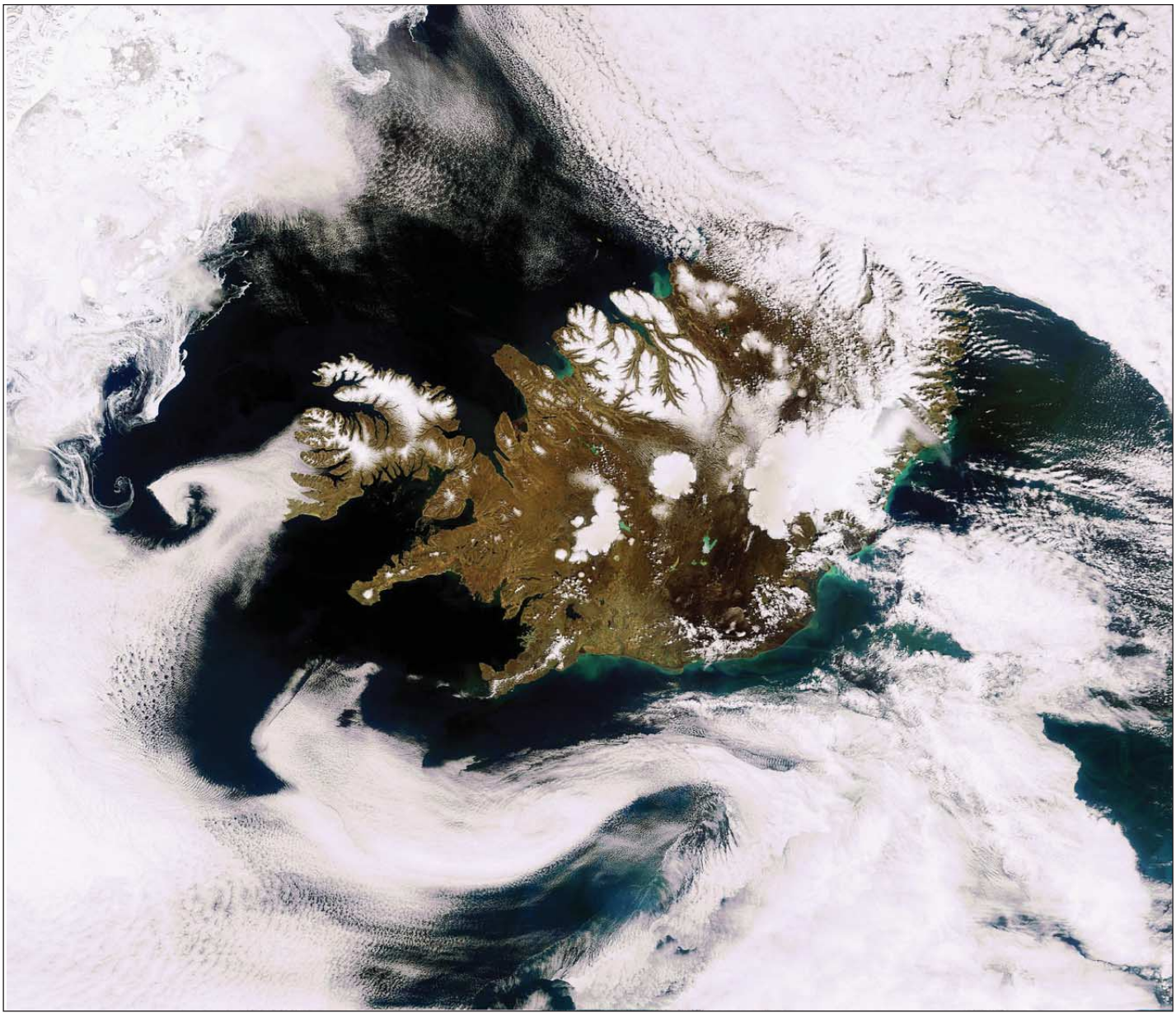


Figure 6 - Aurora photographed near Tromso

Figure 7 - Looking over the rail of the ship towards the Aurora Borealis

Envisat Smoke-Free Iceland

John Tellick



This Envisat image features a smoke-free Iceland.Acquired by Envisat's Medium Resolution Imaging Spectrometer on 24 May 2010 at a resolution of 300 m

This Envisat image features a smoke-free Iceland. Although the island has received a lot of attention in the past months for its volcanic activity, it is also home to numerous glaciers, lakes, lava and hot springs.

Volcanoes dominate the landscape, with more than 100, of which a large number are still active, rising on the island. The Eyjafjallajokull volcano, which had a series of eruptions in April and May, is visible in the dark area on the southern coast.

Sitting in the North Atlantic Ocean east of Greenland and immediately south of the Arctic Circle, Iceland has more land covered by glaciers (11%) than the whole of continental Europe.

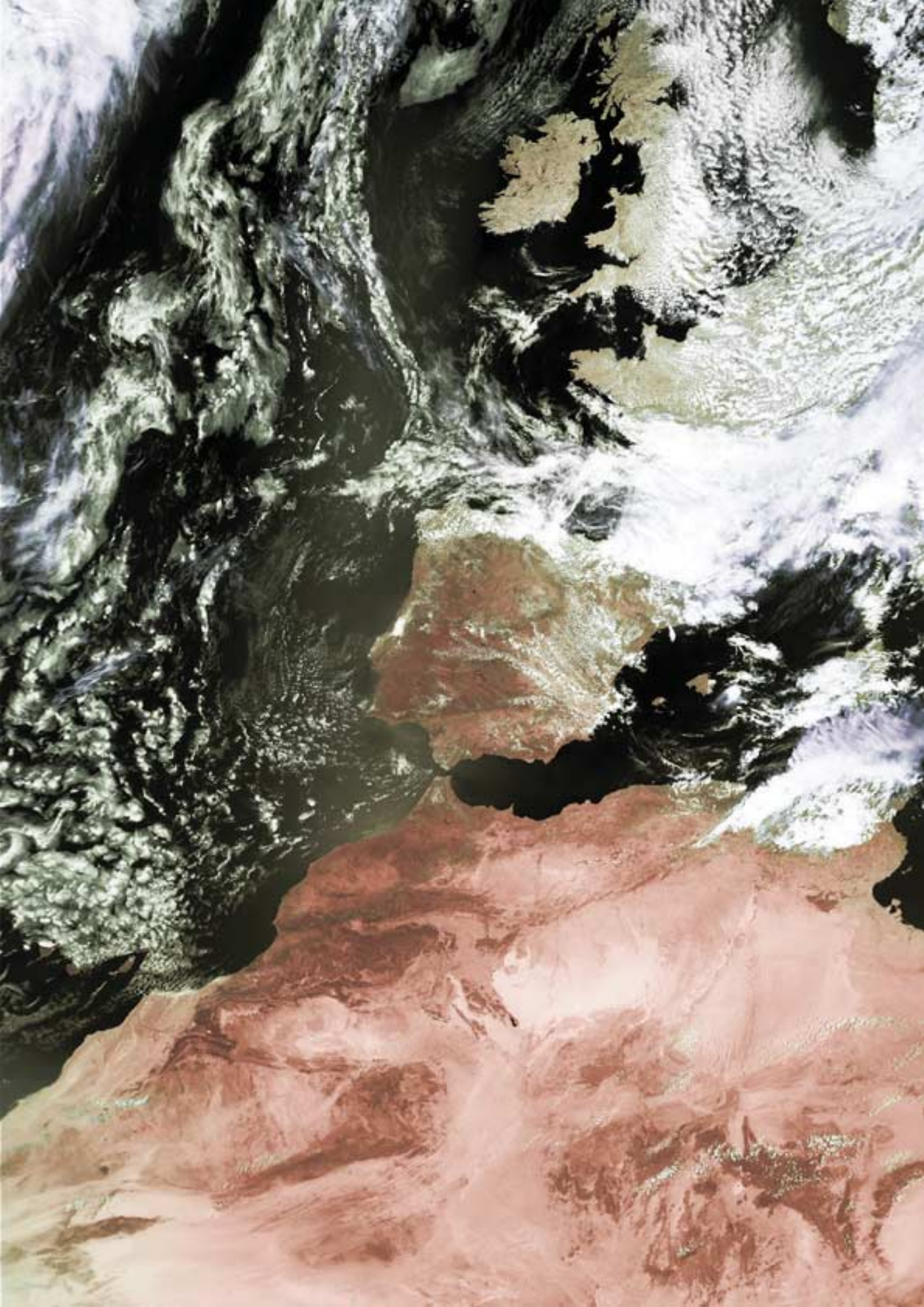
At 8000 sq km, the Vatnajokull glacier (visible in white northeast of Eyjafjallajokull) is the largest in Iceland and in Europe. The white circular patch in the centre of the country is Hofsjokull, the country's third largest glacier and its largest active volcano. The elongated white area west of Hofsjokull is Langjokull, Iceland's second largest glacier.

The front of Langjokull feeds into Hagavatn, a glacial lake with an elevation of 435 m and an area of 5 sq km.

The country's largest lake, Lake Pingvallavatn, is in the lower left of the image. The capital city Reykjavik is slightly southwest of Lake Pingvallavatn on the western coast.

Iceland also boasts some 800 hot springs with an average water temperature of 75ºC. Reykjavik, Icelandic for 'Smoky Bay', was named for steam rising from hot springs in a southwestern bay. Geothermal water reserves provide Iceland's population with most of its electricity and heating.

The various shades of green in the sea along the coasts are due to sediments being transported in the water.



International Space Station

Emil Kraaikamp

Introduction (Fred van den Bosch)

"Long, long ago there were two groups of satellite observers active in the Netherlands. The largest, the "visual" group had been active for years and had their home at the observatory of Simon Stevin in Hoeven. These observers were interested in the detection and recording of satellites or parts of satellites that were in our atmosphere. The results were collected and combined with other observations from around the world. Through these observations, which of course took place at night using binoculars or a camera, one could calculate the orbit of these satellites and / or fragments thereof (such as rocket stages, etc.). The Appleton Laboratory played an important role in this process." [1]

Back to the present. Emil Kraaikamp [2] has given the concept "visual observer" a whole new dimension with his spectacular images of the ISS. Especially for De Kunstmaan and the GEO Quarterly, he describes his methods.

Method

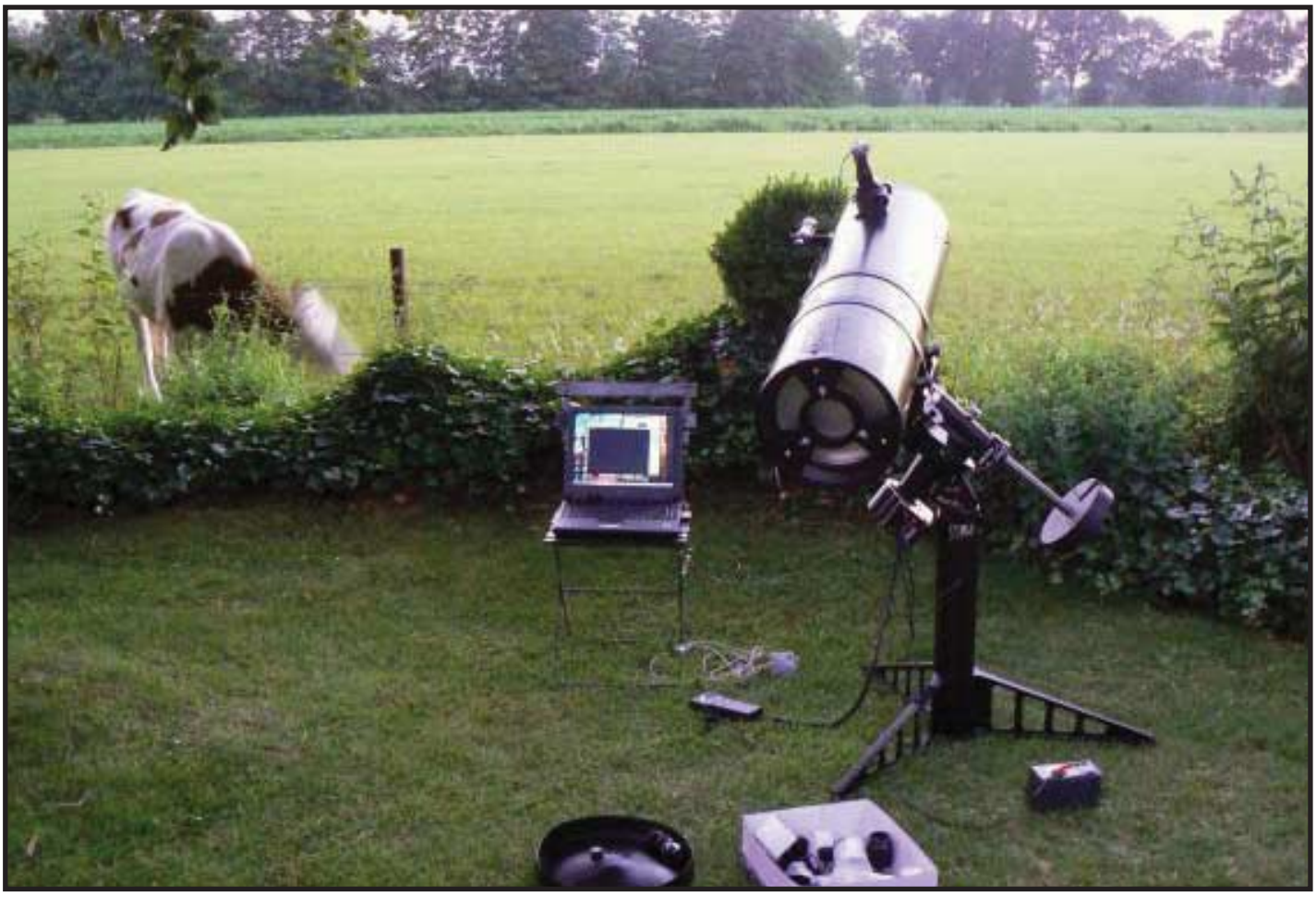
These images of the International Space Station have been captured using a video camera connected to a 25 cm Newtonian telescope. Because the ISS flies at 17000 mph, it's not possible to use the tracking motor on the telescope so it has to be moved by hand. This means I have to try and keep the ISS centred in the viewfinder, while the camera records on a laptop at 60 frames per second. On average, the camera produces around 7000 images during a pass of the ISS, but because it is so difficult to follow, I end up with only a few hundred images that actually have something of the ISS on them. The other images consists the empty space next to the ISS. The images are then edited by hand in *Photoshop* to achieve this end result.

The telescope is a 10" f/4.5 *Meade Starfinder* Telescope. The focus has been extended with a 2x Barlow converter. The camera is a modified monochrome DMK21, in which ICX618ALA CCD has been placed. Therefore the camera is more sensitive to light, and I can compensate for motion blur, caused by the manual tracking and because I have lowered the shutter speed down to around 1/2500s. I usually use an orange filter on the camera to overcome the effects of the air turbulence. During the pass of the ISS, there is no time to focus, so focusing is done very shortly before the shooting on a bright planet or star in the sky. The image of the ISS opposite was captured on 5th May 2010

For more pictures and animations of the ISS - and other none artificial celestial bodies - you can visit my website [2].

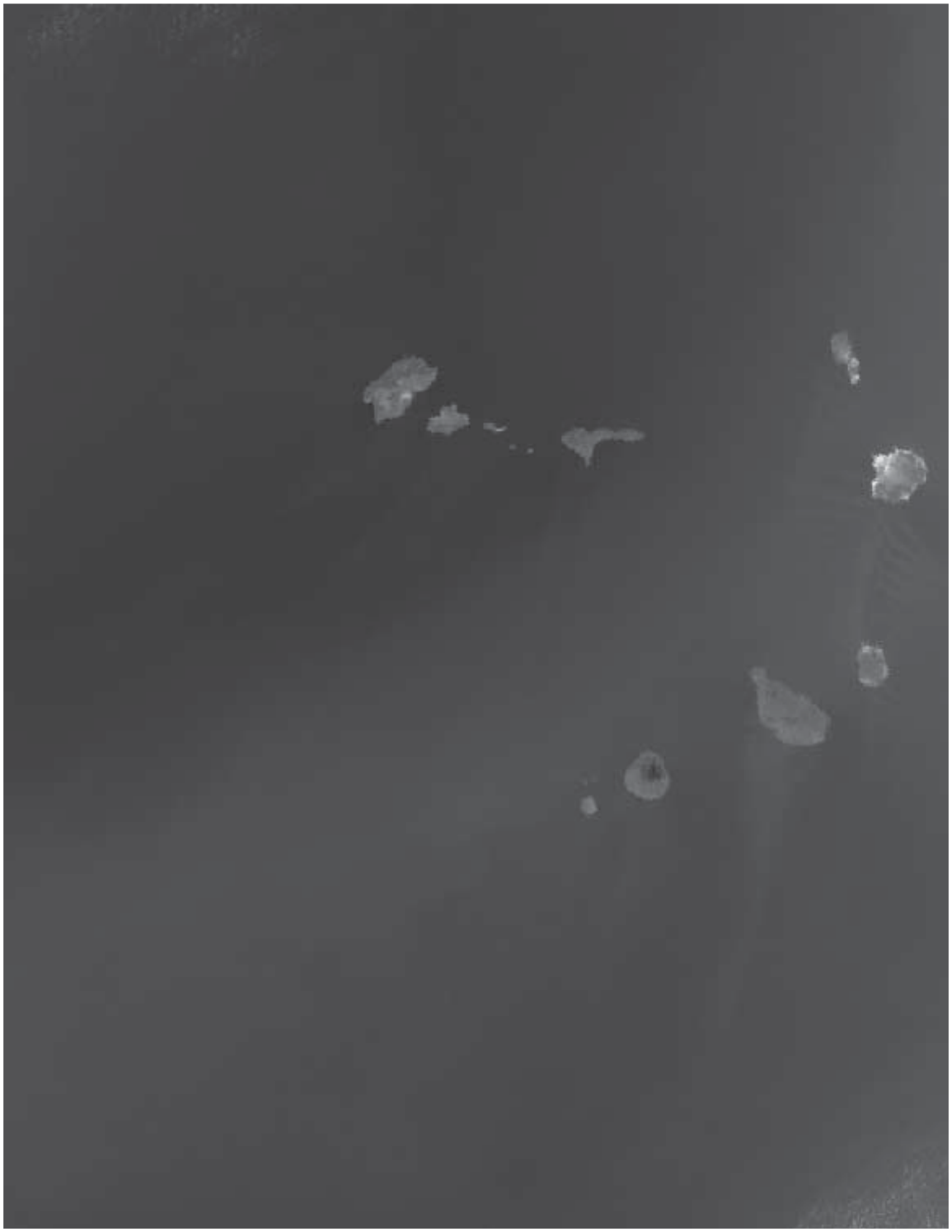
[1] Ruud Jansen, Handbook Working group Satellites, Chapter. 2.2.1 General Working Group

[2] http://www.astrokraai.nl/



10" f/4.5 Meade Starfinder Telescope

This image of the International Space Station was captured on 5th May 2010



Quarterly Question

I was delighted with the responses I received to the last Quarterly Question, so here is another one along similar lines. I was reminded of this image when recently giving a presentation at the AMSAT-UK colloquium in Guildford.

I used some of my small library of ENVISAT images to illustrate the talk. I had recorded this image in early 2010 via the Envi-Ham project and then I processed the raw data using the 'Beam VISAT' software which as an Envi-Ham license holder had been provided to me free of charge by ESA. The image is a small sub-set of the original file I received at home and has been subjected to my personal colour processing - to make it look nice!

The question is: 'What is the name of the island group shown in the image opposite?'

The only clue offered is that the islands are in the Atlantic Ocean.

Answers to my by post - for my address see page one, or by email to francis@geo-web.org.uk. Answers should be submitted by the copy deadline for our next Quarterly. I will pick a winner at random and the prize, like the last one, will be a small marine related present which I will buy when I visit the Comoros Islands in a few months time.

Deadly flash floods hit southern France

Rob Denton g4yrz@wxsat.org

After noticing some unusual cloud patterns and activity on my APT station I knew something was out of the ordinary. It reminded me of the huge sandstorm when I was in Bulgaria but this time it was different.

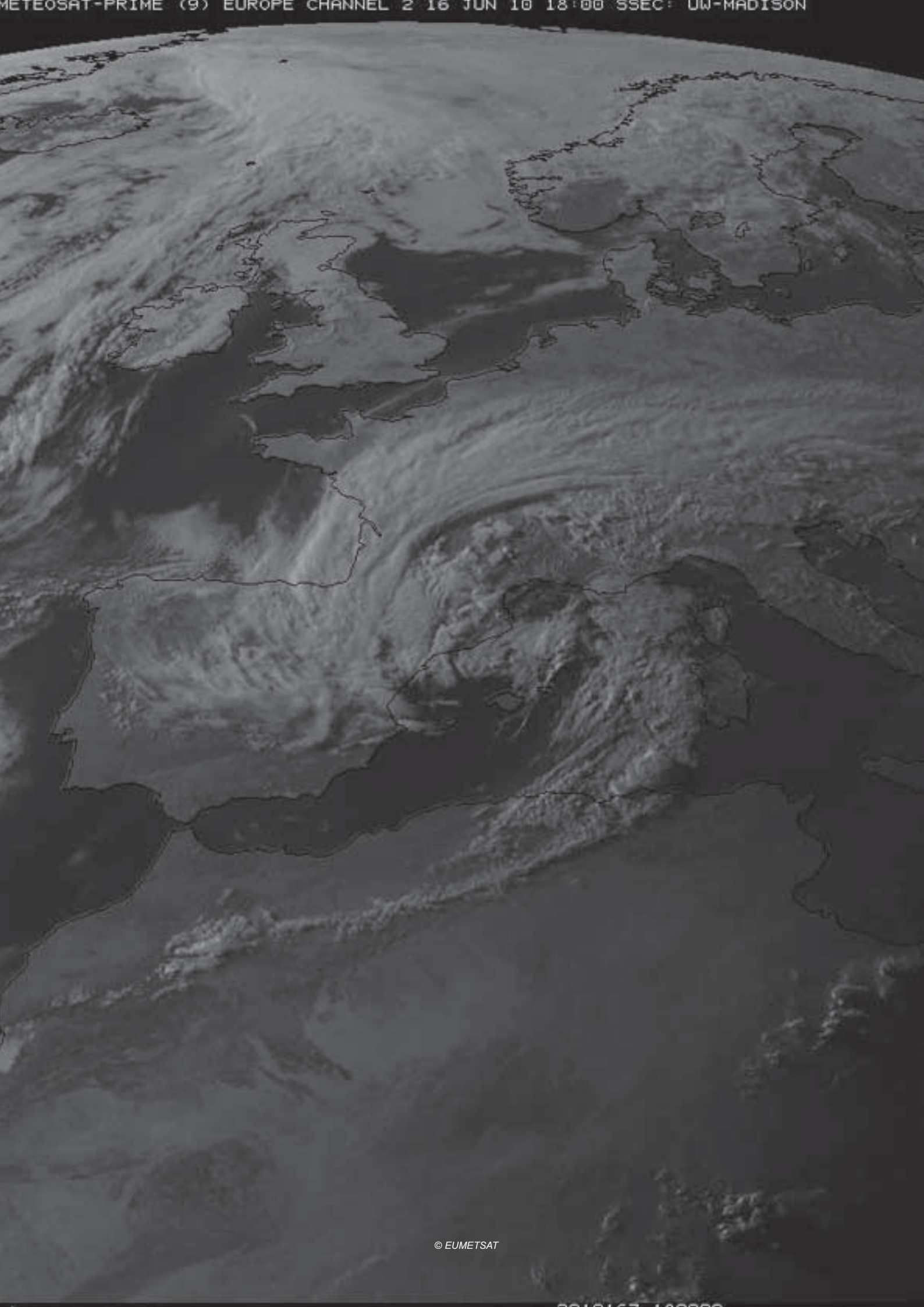
Instead of the sand, Southern France was about to be deluged with a mass of water on the scale that has not been seen before, despite previous floods in that region. Indeed, France was about to be plunged under water, resulting in a loss of 19 lives and many injured.

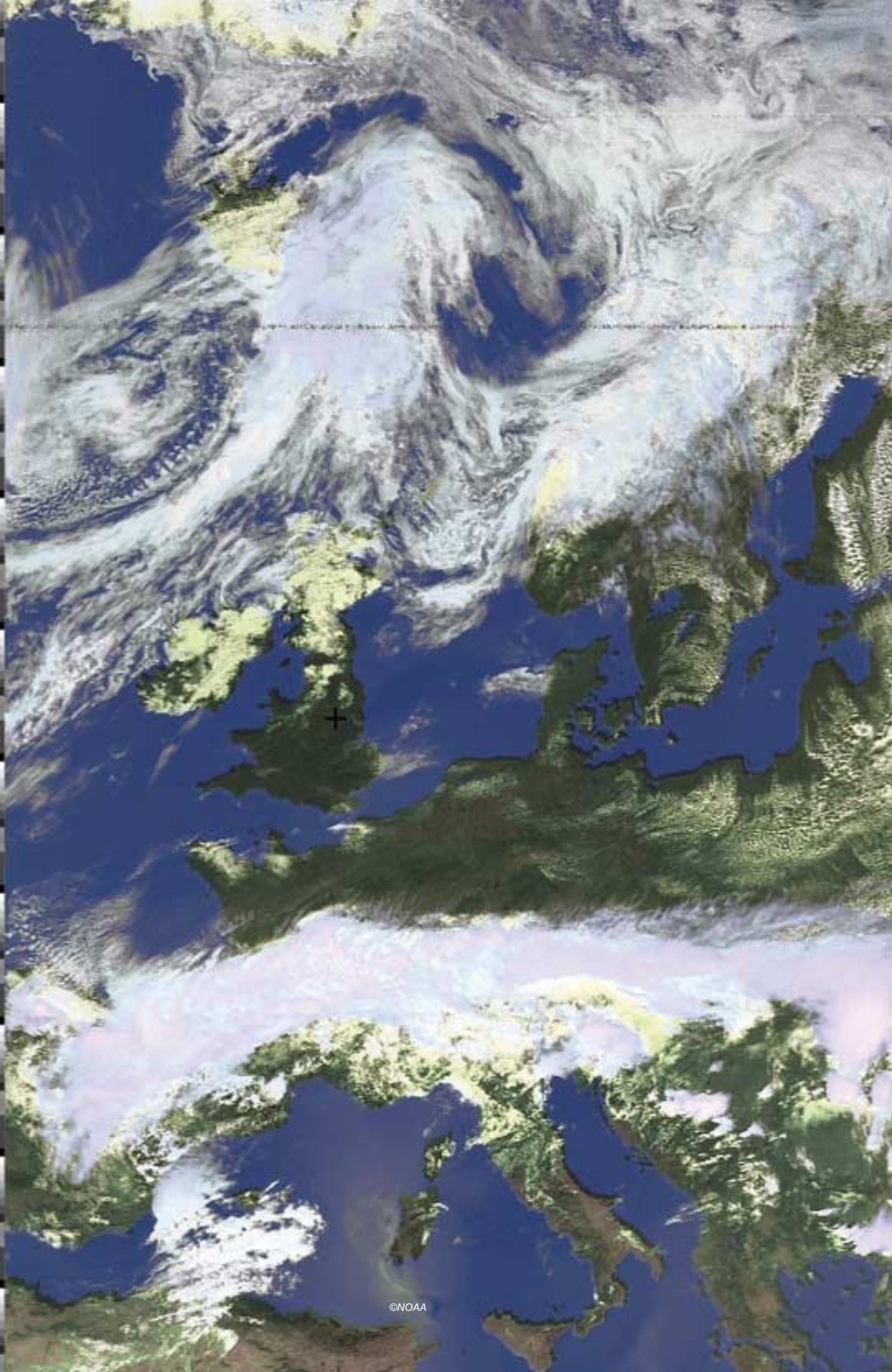
As I had only recently set up my APT station I had not really been following the cloud pattern but on the day of 16th June 2010 it soon became clear that something was not right. I decided to post a message on the GEO Subscribers Yahoo group to see if anyone had been watching this cloud behaviour and received a reply first from Ian Deans "Yes I have just been watching the news and parts of France have had flash floods with over 12 inches of rain in a few hours and regrettably a number of people have died"
Then came an email from John Tellick: "Yes that is not good news. It is quite an unusual image on Meteosat-9 HRV.
These potential storms - along with a chart, were shown on the BBC 1 18:00 weather forecast.
The forecaster predicted: "some potential severe downpours likely in Switzerland - we'll be keeping an eye on these."
Then finally from Alan Sewards in France itself:
"I have been on the front line of this 'disturbance' since Tuesday morning and without power since 7 pm that evening and have not been able to follow the EUMETCast images or via the Internet.
Yesterday was a re-run of September 18th here. We clocked up 242 mm of rain in the 24 hours of Tuesday, most of which fell between mid-afternoon and about 9 pm, at rates of up to 100 mm/hour.
Fortunately, we had no serious problems this time but we came very close as a new drain I had installed to carry off the water got blocked by debris and in a very short time the level built up to the critical overflowing point. Being on the spot, I was able to clear the obstruction and the drain quickly dropped the level to a safe one. I've got to think of a solution to this!
Various measures undertaken since the September floods ensured that there was no repeat of the disastrous flooding and damage around here,
but communities further away were not so lucky. Those where people died are no more than about 20 km away from us, but were not affected by the September rains".

Later that day after watching the images I knew that someone was going to feel the wrath of nature, it then became clear to me on the evening news and internet news what had actually took place, capturing many people unaware.

I captured the unusual cloud mass on my APT image (HVCT Mode with WxToImg on R2ZX Receiver and Wimo sloping Cross Dipole) the colour image on page 13, along with a Meteosat Image from SSEC courtesy EUMETSAT (page 12) which I downloaded from the web as my EUMETCast station is not up and running yet, look how it stretches all the way across Southern Europe from Spain to Bulgaria. Unfortunately most of it dissipated over Southern France with reckless abandon.

"We have never seen so much rain in the month of June," Patrick Galois of Meteo France told the BBC. The rescue workers numbered 2,000 with some 1,750 homes left without electricity and over 1,000 people had to leave their homes and spend the night in temporary accommodation. Meteorologists say the floods are the worst in the region since 1827.
Inhabitants of Draguignan, a town between Marseille and Nice, were particularly badly affected by the sudden downpours, which began late on 15th June just as people were travelling home from work and continued through the night.
Because the region is a prime tourist destination at this time of year, many foreign tourists were among thousands evacuated from nearby campsites and villages. Across the area as many as 200,000 households were without electricity and authorities warned of disruptions to drinking water supply in the following days.

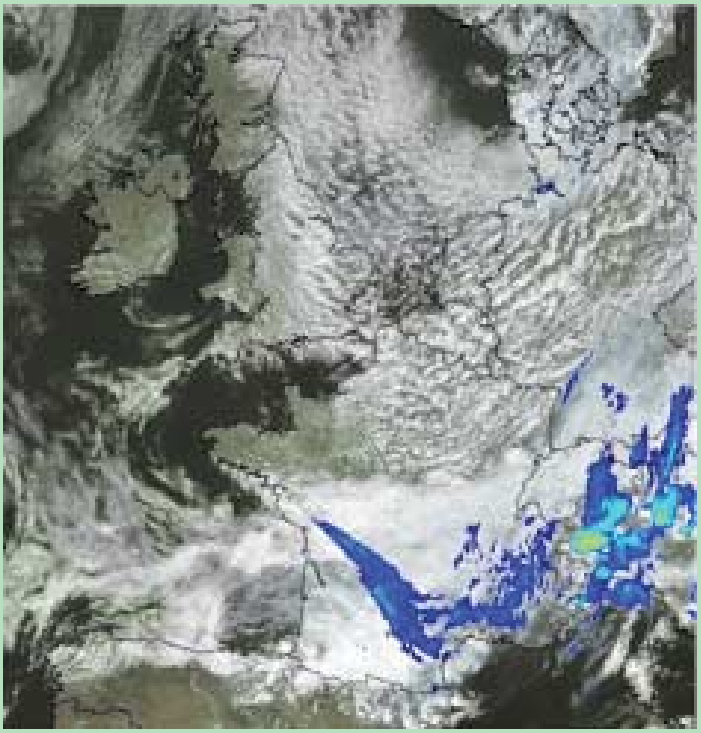

METEOSAT-PRIME (9) EUROPE CHANNEL 2 16 JUN 10 18:00 SSEC: UW-MADISON
© EUMETSAT


©NOAA

A Perfect Front

Robert Moore

Glancing through some IR images I wondered whether there has been another eruption on Iceland on 19th June. A proper inspection showed that the thin white 'plume' was, in fact, a long cloud starting from somewhere near La Rochelle in France and widening to the south east (rather like a smoke or ash plume). LUTConvection-day showed that there was likely to be some vigorous activity in this area.



[Picture 1] ©EUMETSAT

The cloud tops were at 11,200 metres, nearly twice the height of the surrounding cloud. It was not easy to separate cloud types in such a narrow strip, but Grib Viewer indicated Cumulonimbus along the north eastern edge of the cloud formation and Cirrus clouds above. What was going on? The DWDSAT noon MSLP chart showed that the line of clouds were lying along a cold front (picture 1).

This was cloud above a cold front as seen typically in diagrams, or carefully selected satellite images, in meteorology textbooks. A perfect cold front! (picture 2)

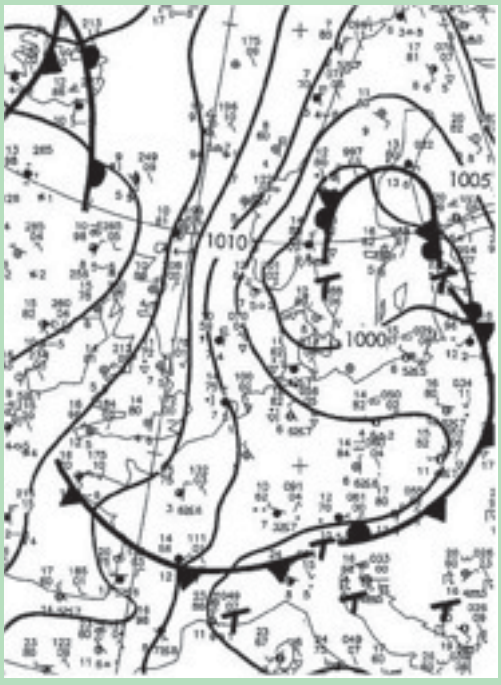
So how about precipitation, France had suffered a number of heavy storms with flooding and loss of life in the previous week? The SATREP **(http://www.satreponline.org/**) chart indicated the possibility of severe weather in this part of France but nothing on the internet suggested any weather out of the ordinary.

Whilst in the SATREP site I looked at the geopotential height for 500 hPa. (picture 3)

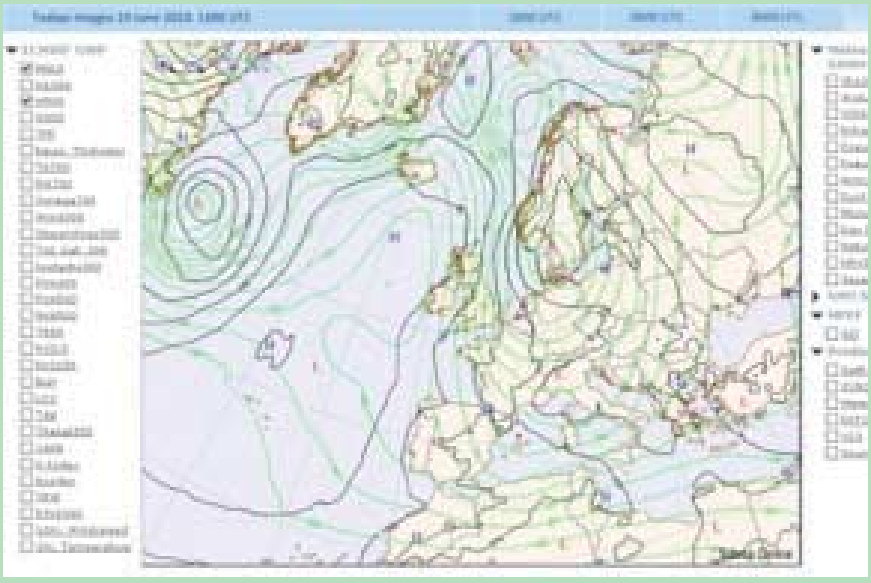
The winds across France were from a roughly northerly direction although at the northerly point of origin of the cloud formation it would have been nearly easterly and here at 500 hPa the jet stream was crossing the lower winds at right angles and likely to generate considerable wind shear. The upper winds, visible in the satellite images, were being carried by the jet in a south easterly direction. The higher clouds in the 'plume' were actually marking the line of the jet stream.

The little crossing winds feature remains an interesting one* . I am no meteorologist, but my guess was that cold air in the region was encountering considerable wind shear, but if this was having a significant effect on the weather I was not able to spot it. Weather Underground reported no rain in either La Rochelle or Bordeaux on the 19th. By 0600 on the 20th the front was passing over north eastern Spain but the accompanying cloud was unremarkable,

**For a discussion of 'crossing winds' see Watts, A. The Weather Handbook Waterline Books, 1994) Chapter 5 and page 67.*



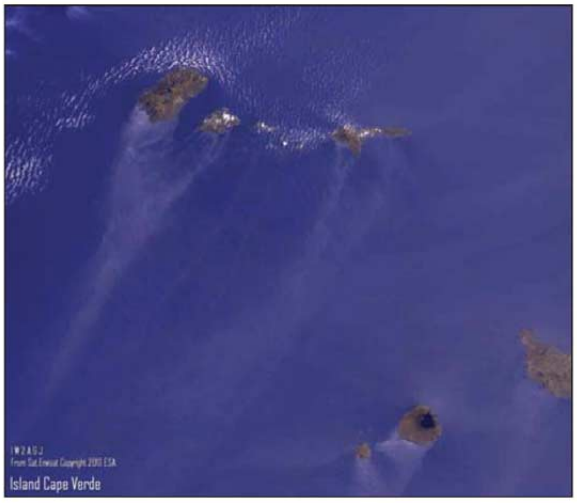
[Picture 2]



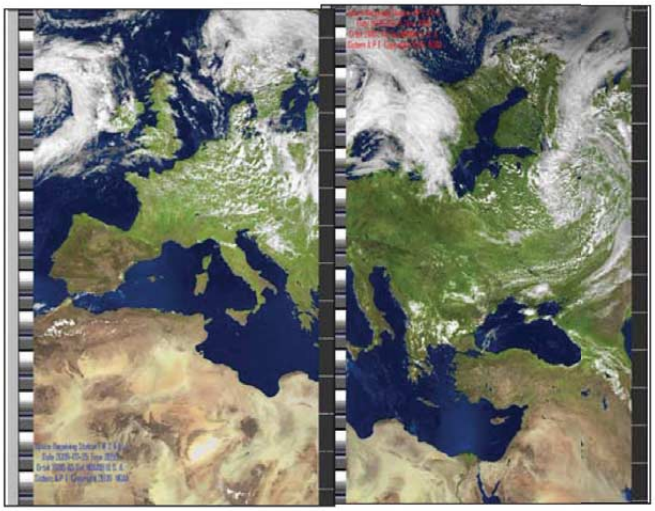
[Picture 3] ©ECMWF

Enrico Gobbetti's Station in Soiano Del Lago, a small village close to the Garda Lake in the north of Italy

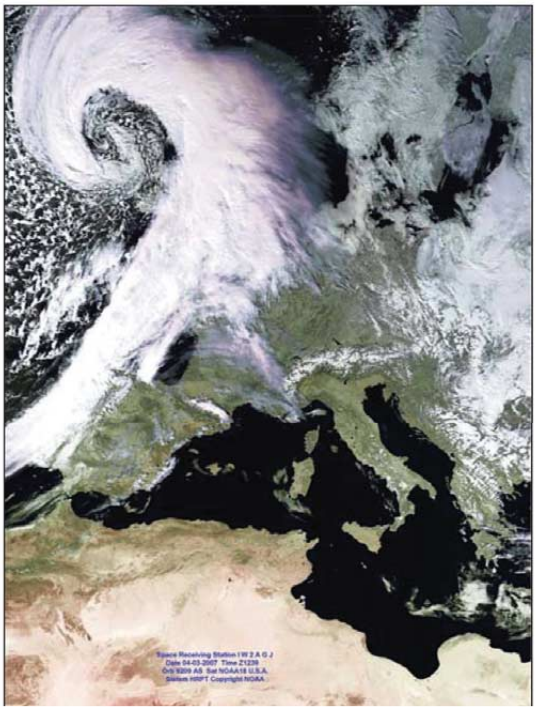
The camouflaged antenna farm (this is just a small selection)



Envisat image of 20-03-2010 at 12.03Z Cape Verde Island



NOAA19 of 25-07-2009 at 12.52Z APT asc. Orbit 2385.
NOAA18 of 15-08-2009 at 11.09Z APT asc. Orbit 21382.



Soiano Del Lago, Receiving Station

Enrico Gobbetti IW2AGJ

Let me introduce myself. My name is Enrico Gobbetti, living in Soiano Del Lago, a small village close to the Garda Lake in the north of Italy. As an amateur radio licence holder with the call sign IW2AGJ, I am really interested in the reception of spatial signals, with a special interest in all metrological satellites.

As a subscriber of GEO for many years, following your request to submit our personal experience, I decided to send my contribution.

I have been involved of weather satellites for over thirty years, starting with analogue Meteosat images, and later with Meteor, NOAA APT series and so on. In 2004 I have added my NOAA HRPT reception system.

I also have the facility for the reception of the new MSG-Meteosat series via DVB.

Starting off in July 2009, thanks to the ESA-ESRIN organization in Frascati, I have obtained the special licence EHAM-Nbr007. As a result, I am able to receive Envisat images via DDS system.

I am strongly hoping, in the future, that ESA and NOAA will continue to give to us amateurs the possibility to receive hi-resolution images from metrological satellites, including direct reception of new digital signals.

I am informed that, starting from October 2010, the new Russian satellite Meteor M-NI will be operational at 137.100 MHz in LRPT and 1700 MHz in HRPT but with the my current HRPT software I may not be able to decode images. I am sure the support of the group we will be able to decode the new images when they arrive.

The images opposite are a small selection from the many thousands that I have received. I hope you enjoy seeing my station and images.

Part of my receiving set up is for APT reception:

Antenna 9+9 elements circular polarization, dedicated receiver mod. FTM500 (CCE Bologna).

Software WXTOIMG, dedicated HP computer.

For HRPT reception: Antenna 1.5m dish, homemade helix feed, 1700MHz DB6 preamplifier, HRPT receiver made by Nuova Elettronica, software HRPT READER (David Taylor), dedicated HP computer.

Editor.

At GEO we are very keen to see your receiving stations and the results of your labours. Why not share your experiences and images? Send them into editor@geo-web.org.uk

Mobile Broadband for your Weather Station-An Update

Rob Denton (rob@wxsat.org)

Well, as I do more I learn more, and after communication with Ed Murashie in the USA, he suggested I should do an update for GEO. So here it is.

Since my last article in GEO Quarterly 25, March 2010, there have been many events happening. Namely, problems with my internet connection!

You may remember I said that I had moved to a rural village where the landline internet was very slow. Well, the mobile broadband was fine for 5 months and then I started getting problems. Certain programs wouldn't work correctly; example: the famous auction site. I couldn't sell things as the windows would not display correctly. I knew it wasn't my PC at fault because I tried three of them! I called the auction company and tried to work things out with them. They suggested it could be an ISP problem (Internet Service Provider) My emails were also playing up, some of them were corrupt, either blank or garbled messages. Also my weather satellite programs were behaving strangely. I had checked for viruses and malware but everything was clean.

So why this after 5 months of trouble free operation? To be honest with you I don't know. I checked the connection speed with several different sites and got an average reading of 2.3Mbps so it was surely fast enough.

Maybe someone out there has the answer?

How did I get round it? You would never believe it. I called good old BT. They had an offer on which included free unlimited phone calls but only included service with a max speed of 2.0 Mbps. I thought I would give it a try and took the plunge. I didn't expect miracles with a low speed but was pleasantly surprised. At start up the average speed was 1.2Mbps, but surprisingly the PC loaded faster, everything was smoother and what's more, EVERYTHING WORKED!

I have sent for a broadband accelerator, which is free to BT customers. Basically it's a filter to remove the noise and interference, therefore giving a purer and faster signal (up to 1.5Mbps faster) which could in effect significantly boost my speed, which is already faster than the mobile broadband network.

Now the bad news. The cost is £30 per month, twice what I was paying for my mobile broadband, but taking into account the unlimited anytime free phone calls, it must surely be worth it.

I thought I could save some money by my mobile broadband, but I was wrong. I will eat humble pie. But, are ALL mobile broadband providers the same? I think not.

In my case, cheapest was not best. I now run through my BT home hub 2.0 (modem) but would surely like to try a different mobile broadband provider and test the results. What has changed after 5 months? I never did find the answer. The story goes on.....

Thanks to all my GEO friends for their support.

Preview of the New EUMETCast Client

Arne van Belle

On June 22nd Sally Wannop from EUMETSAT announced a pre-release version of the EUMETCast Client Software for Windows to manufacturers.

Manufacturers and a limited number of amateurs have been given access to this new client for testing.

In early September, it is planned to use EUMETCast to disseminate the final version of the software to all registered users. The final release will additionally contain updated drivers for Linux, but the Linux client will remain unchanged.

David Taylor, Ian Deans, Douglas Deans, James Brown and I have taken up the challenge and are beta testing the new client installation.

The pre-release client has version number 2.5.17 and will replace the previous version 2.4.4a for Windows.

EUMETSAT recommends not to upgrade the 2.4.4 version but uninstall and perform a complete installation of the new client.

Please note that uninstalling the old version will completely remove your "T-Systems\BusinessTV-IP" folder under "Program Files" !

So if you have not done this before, make a backup now !

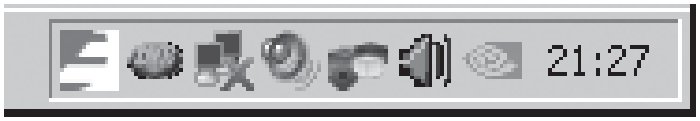
Go to \Program Files\T-Systems\BusinessTV-IP\ and copy the files recv.ini and recv-channels.ini that contain your personal settings to a safe location. I recommend to back these up onto a USB stick together with a text document in which you pasted your username and userkey that was received by Email and matches your EKU ! Be sure to copy and not move these files !

What's new in TelliCast 2.5.17

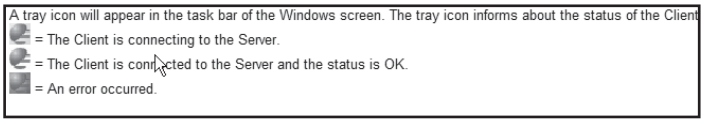
Gone is the pink T-System style, the HTML Shell is now completely re-styled according to the EUMETSAT website, using deep blue colours.

Unfortunately this includes the pink TelliCast Icon on your desktop and in your system tray ! This will need a rewrite of many guides and manuals.

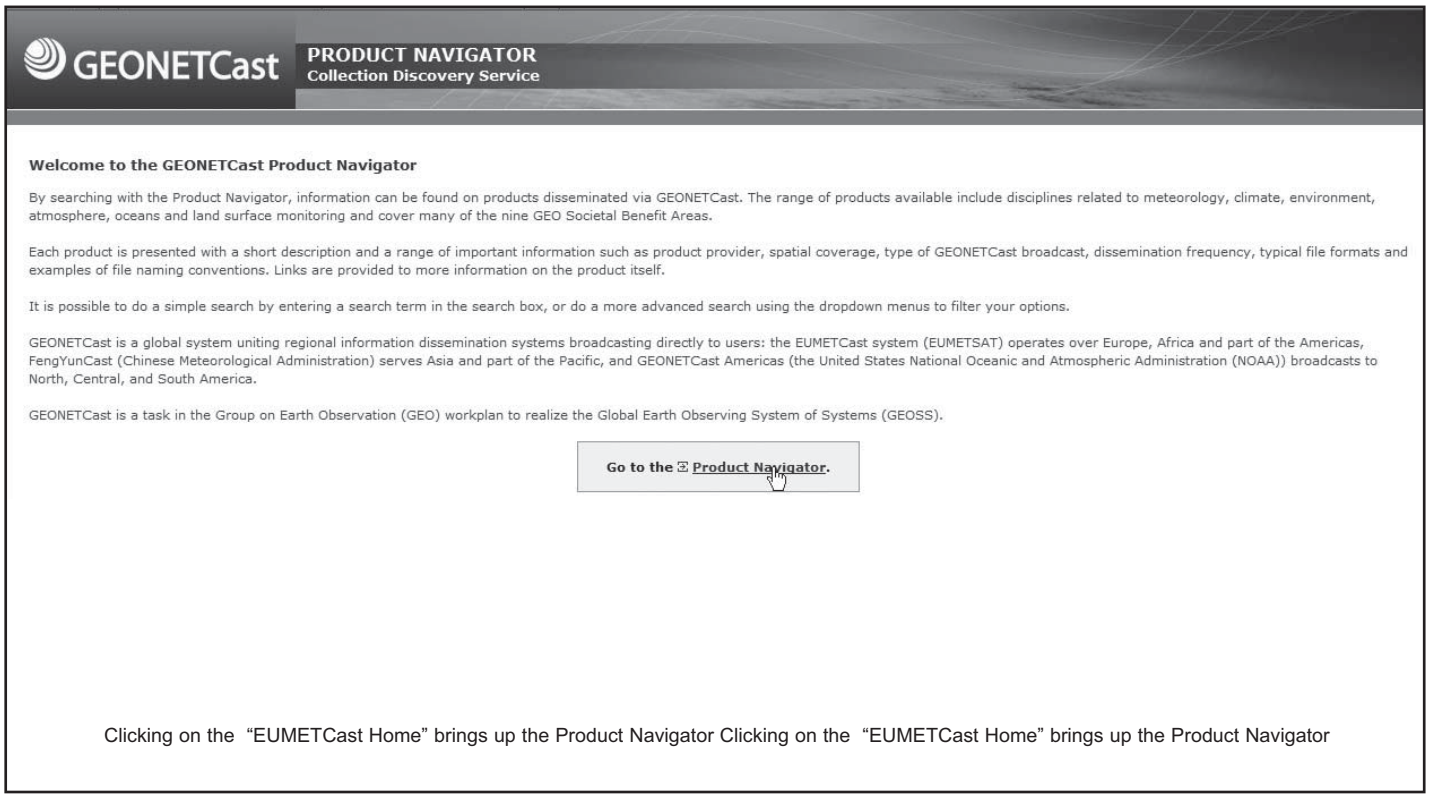
The colour scheme used for TelliCast status is the same however; White = OK, Yellow is Connecting, Red is an error.



On the left the new TelliCast Icon in the system tray, next to the green DVBworld icon



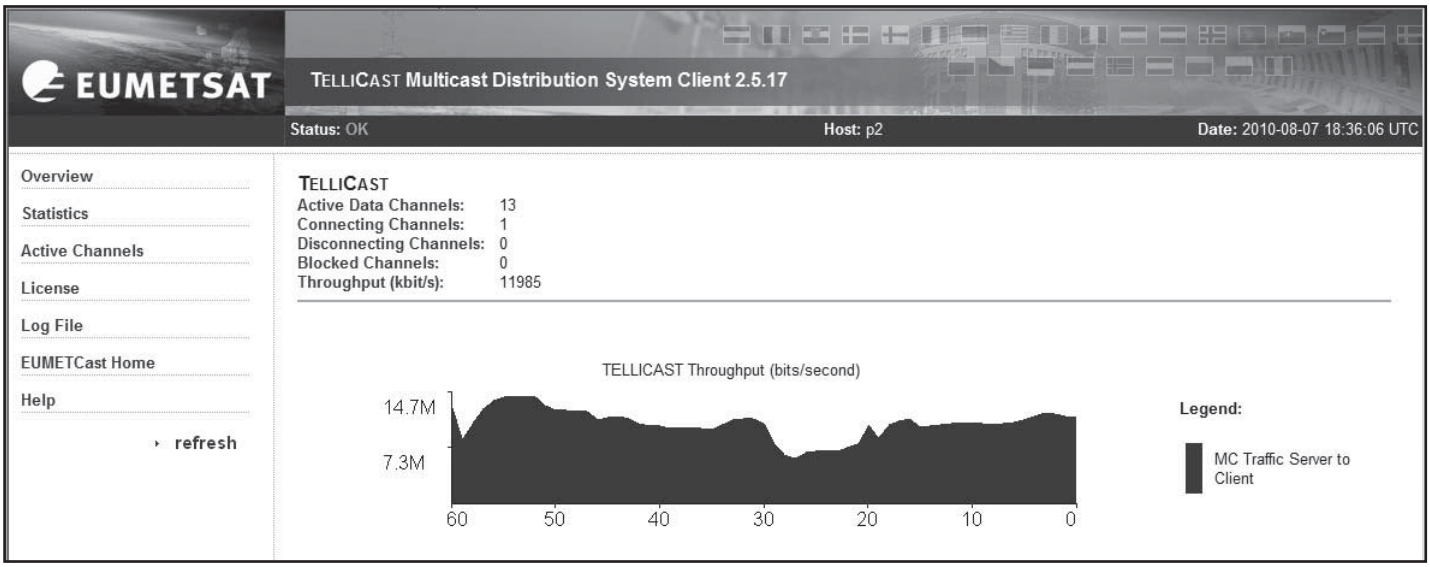
The colour scheme used in the Icon is unchanged and shows TelliCast's status



Clicking on the "EUMETCast Home" brings up the Product Navigator Clicking on the "EUMETCast Home" brings up the Product Navigator

A new EUMETSAT menu is added to the HTML Shell to access the disseminated EUMETSAT html pages directly. Although not fully functional in the pre-release yet, we can now open the GEONETCAST Product Navigator directly from the TelliCast HTML Shell and search for information on all disseminated products without having a connection to the internet. For more info on the Product Navigator, browse to:

http://www.EUMETSAT.int/Home/Main/News/Features/711115?l=en



The new client with EUMETSAT skin, note new "EUMETCast Home" link in the left bar

As these HTML pages are disseminated daily over EUMETCast, this offers EUMETSAT a way to have up to date info available for every user.

But more important are the internal changes in the new client, the file database location can now be set to memory.

In this mode the new client does not need a RAMdisk any more to receive large volume data like MetOp, AVHRR and MODIS without missing segments or files !

The received files are written directly to a temporary location on hard disk now, saving write operations. So there is no 0. fsy file (some also have a 1.fsy too) any more.

Our tests have confirmed that the new client is indeed capable of receiving high data volumes without missing segments or files that the old client threw when your system is not in the "high end" category.

Furthermore the folder structure has changed for easier administration.

Log files have a separate location now at C:\EUMETCast\logs

All received files are written under C:\EUMETCast\received (with various channel target directories below)

New is the C:\EUMETCast\tmp folder. Although the old client also could use a tmp folder, this one is different. TelliCast creates 256 directories under the tmp folder named 00.fdb to ff.fdb and collects file fragments of every received file in a separate folder. Once a file is complete, TelliCast renames and moves it to the received folder.

But here comes the catch ! Under normal conditions all these 256 directories should be emptied once data is in. But when you stop TelliCast, there can be a number of incomplete files left behind in these folders.

Because there is no database any more, TelliCast has no record of these incomplete files after it is restarted.

EUMETSAT recommends to install "housekeeping" on the received and tmp directories to avoid temporary files filling your hard disk.

At the time of writing we are monitoring the disk usage of this tmp folder and looking for an easy way to clear incomplete files gathered at a stop of TelliCast.

David Taylor has given detailed instructions for using the free TrimTree program to perform this task both for systems running 24 x 7 and for those who start afresh each day. This information will be updated as we learn more about the best settings:

http://www.satsignal.eu/software/disk.html#TrimTree3

Why is there a new client ?

Although the old client does do its job well, it is limited in the number of simultaneously receivable files and their file size. Most amateurs only receive a limited number of data channels, the professionals do receive the full package and have to use very large FSY databases (up to 500 MB on fast disk or RAMdisk).

We have been told that in the near future even larger files may be disseminated that do not fit into an FSY database any more.

With the new client there is no FSY database with limited size, instead we have 256 temporary folders on hard disk. So theoretically the new client could receive up to 256 files simultaneously with a total size limited only to the free space on your disk.

Do I have to upgrade ?

As mentioned before, amateurs generally receive only a limited number of channels, so as long as files on these channels do not drastically increase in size, your old TelliCast version will continue to run normally.

But EUMETSAT will advise every user to upgrade as older versions will not be supported any more once the new client is officially released !

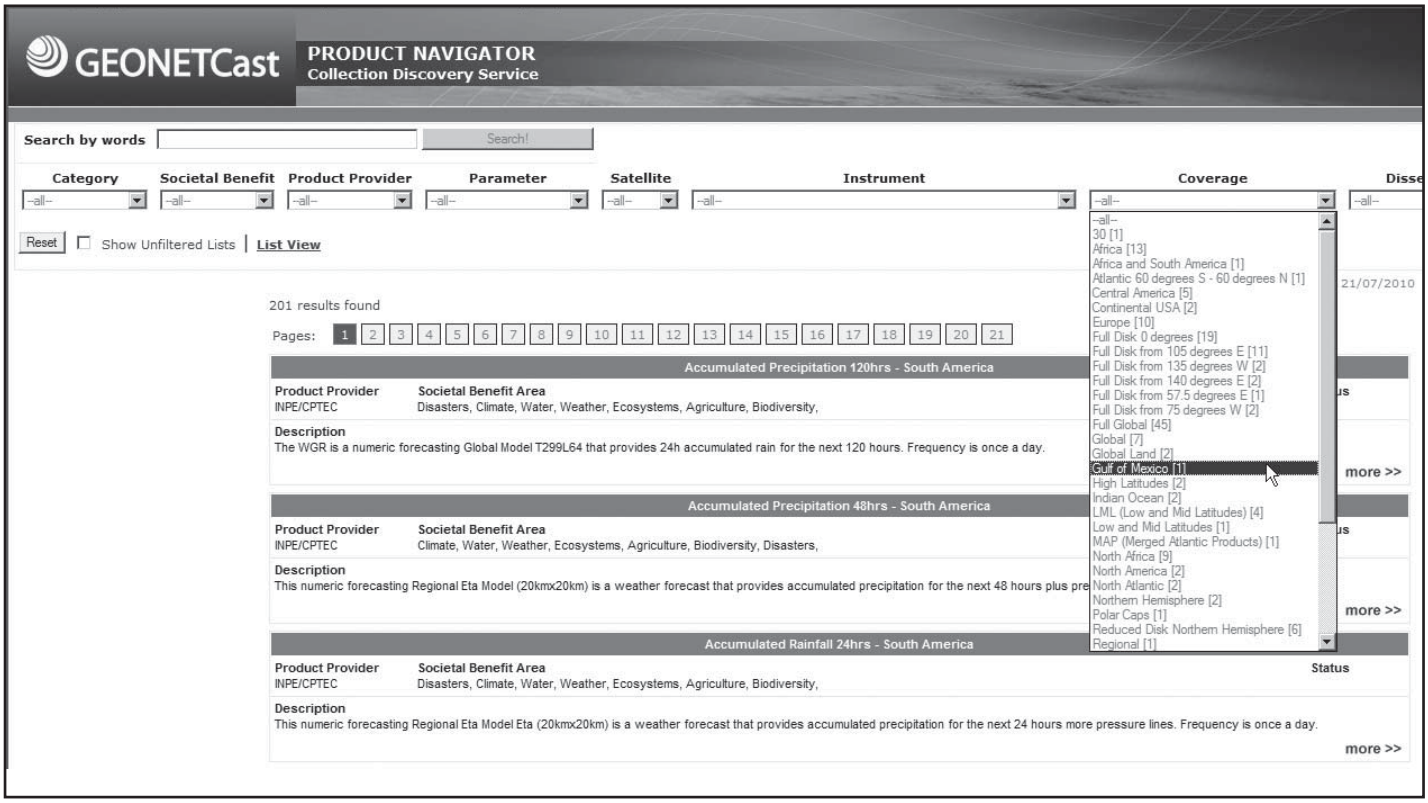
In the new Client package there are also new drivers for the receivers and EKU.

If your system runs fine now, there is no need to update these too. The new client is compatible with these older receiver and EKU drivers.

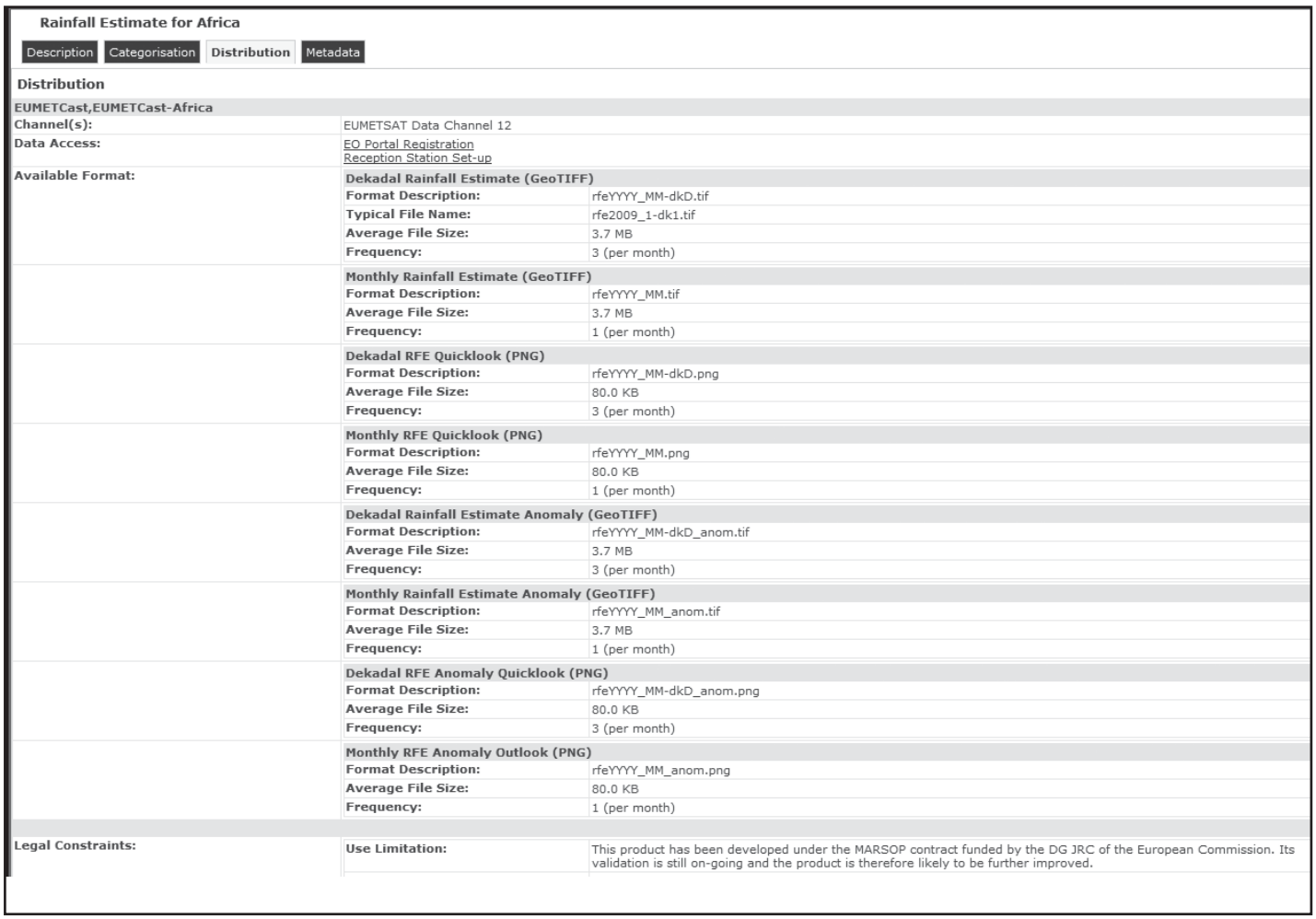
Channel selection:

The new client also comes with a new recv-channels.ini file.

This file lists all the currently available data channels and sets a folder under "received" for every channel.



Searching in the Product Navigator can be done in many ways:



And shows detailed information on all products disseminated over EUMETCast

Apart from the entry used for the EUMETSAT HTML pages, users can change this file as they like. A word of warning is in place here, at the end of the data channel entries, there still is a [*] entry that catches all data that has not been matched by the data channel entries above ! Amateurs better disable this entry.

David Taylor is currently adapting his managers to conform largely to the new folder structure under received.

For those not knowing how to edit the recv-channels.ini file, a ready configured file is available for download at:

http://www.satsignal.eu/wxsat/atovs/recv-channels.ini.txt

Now some test results:

I tested under XP using very low performance system. This Foxconn nt330i netbox uses a dual core Atom at 1.6 GHz and nVidia ION onboard graphics. A 160 GB notebook type hard disk (2.5") is used, a lot slower than most desktop systems.

The DVB world receiver, EKU, keyboard and mouse are all connected over USB2.0.

This netbox has the size of a dual DVD box, consumes less than 32 watts including the USB receiver and still has the "power" to serve the decoded files over the network. Although this system is not recommended for running 24x7, it is excellent for demos and can run from a car battery!

After a lot of tweaking, I am able to receive and decode MSG+FSD+AVHRR+MetOp by using the 2.4.4a Client and a huge 500 MB RAMdisk.

The FSY database and temp and received folder are all stored on RAMdisk, leaving the slow hard disk only to write the decoded images. But only a slight hiccup causes the RAMdisk to overflow and stop reception.

But now the new client is installed with EUMETSAT's recommended settings, this system is capable of receiving a huge amount of data without using a RAMdisk and without missing segments or files !

By enabling almost all data that EUMETCast offers on my EKU and using the new recv-channels.ini I received over 30GB of data during an 8 hour test period without missing a file. To make sure it wasn't a lucky shot, I repeated this for 4 days successfully. Only rain fades disturbed my test on the fifth day but losses where similar to those reported by my old system running TelliCast 2.4.4a.

Ian Deans, David Taylor and James Brown are testing on Vista and Windows7 64 bit and did hit a snag unfortunately, the new client did loose data.

After testing with lots of different settings and many discussions, Ian and David discovered that mstDefrag does interfere with the new client. We now think that this background defrag program does act on the files being build up in the tmp folder on disk, preventing TelliCast moving or renaming the file once it is complete.

Later tests have shown that the mstDefrag problem is also present under Windows XP, but with a much lower frequency of occurrence.

With the tmp folders on RAMdisk or on another drive, excluded from mstDefrag, the losses are gone and the new client performs well.

Ian is currently experimenting with a different (and free) defrag program and it is looking promising.

The tighter security on Windows 7 and Vista also causes problems on saving the EUMETSAT HTML pages but this can be worked around by not installing the new client under "Program Files" and it looks like this will be solved in the final version.

Is the RAMdisk completely obsolete now ?

Currently my tests have focused on receiving only, my goal is to receive and process data on the same system, just like I have done with the 2.4.4a client over the last 3 years. Tests with different configurations on the new client have shown that even the new client will start to loose files if the hard disk is heavily loaded by other tasks.

Simply opening a folder with say 8000 received files in Windows Explorer causes long periods of hard disk access, disabling TelliCast to access the disk in time.

By using a RAMdisk for storage of the tmp folder, we can create a second storage path that is much faster than a hard disk !

The new client can be configured to use a RAMdisk, there is even an option to do this for every data channel separately. So if your hard disk isn't handling well you could for example move the tmp folders for only MetOp and Modis data to RAMdisk.

Final words:

Our tests show that this new client runs excellently,even on systems that are not up to the spec that EUMETSAT recommends.

The new program and file locations are well chosen and make maintenance and troubleshooting a lot easier.

But users should be aware that the new client requires some additional housekeeping to avoid temporary files filling up their hard disk.

Thanks to EUMETSAT for inviting us to test this new client and answering the many questions !

Authors note: This article is based on beta testing the installation of the new client software, and you should be aware that the information may be subject to change before the final release of the software. Owing to tight publication deadlines, it has not been possible to obtain approval from EUMETSAT for the publication of this article.

Editors note:

GEO will in the following quarterlies carry more information on this new EUMETCast client. To keep up to date as it is released why not follow the progress the Yahoo user groups GEO-Subscribers and MSG-1 and for the latest on David Taylor's Satsignal software. We are also keen to share your experiences using this upgrade with other members via our pages, so please write in and let us know.

GEO Shop

Manager: Clive Finnis
email: tech@geo-web.org.uk
FAX: +44 (0) 1202 893 323

MasterCard VISA SWITCH SOLO PayPal

The 'Pager-Hardened' R2ZX

APT Weather Satellite Receiver

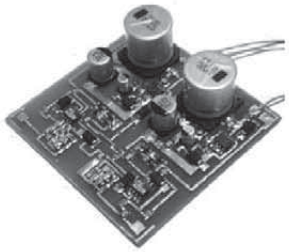
This upgraded version of the German-built R2FX receiver has been developed specially for the UK market and is available solely from the GEO Shop. If you are in an area suffering from pager interference on the NOAA-18 frequency of 137.91 MHz, this receiver should be the answer to your problems - see the R2ZX review in GEO Quarterly No 14.

UK member's price - 210.00 UK non-member's price - £224.00

We still stock the **original R2FX** receiver which has proved itself to be a top-quality receiver throughout Europe and the world at large. Members in the UK find that the R2FX gives perfect reception of NOAAs 12-17, and in favourable locations (pager-free) of NOAA-18 also.

UK member's price - £180.00 UK non-member's price - £194.00

John Silver's Lightning Radar Board



This is a DIY kit for constructing the circuit boards needed to develop your own system to detect and track thunderstorms in your vicinity, using a computer and readily available free software. Full instructions (which appeared in an article in GEO Quarterly 17) are included.

UK members price - £55.00
UK non-members price - £65.00

The Bias-Tee allows a mast head preamplifier to be used with the 'Antenna 2' input of an R2FX or R2ZX. Only the 'Antenna 1' input normally feeds power to a preamp. The Bias-Tee now allows you to power twin preamps and maintain the receiver's Antenna Diversity feature.

UK members price - £20.00
UK non-members price - £24.00

DVB World DVB-S USB2102

This superior 'free-to-air' **USB2** DVB satellite TV and data receiver is recommended for trouble-free *EUMETCast* reception on the Windows Vista platform. This plug-and-play unit comes with comprehensive installation instructions and a CD-ROM of driver software. It is very similar to the Dexatek unit reviewed by David Taylor in GEO Quarterly No 17

UK members price - £60.00
UK non-members price - £70.00

John Silver's APT preamplifier was featured as a constructors' kit in GEO Quarterly No 12 (December 2006). Now we are able to offer this high-linearity LNA to GEO readers, ready built.

UK members price - £35.00
UK non-members price - £40.00

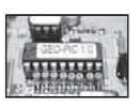
Universal Ku-band Satellite TV LNB 0.20 dB

(or equivalent)

This is a quality high specification Universal LNB for use with the SkyStar 2 PCI card, *Dexatek* and *DVBWorld* USB receivers and digital satellite TV receivers.

UK members price - £12.00
UK non-members price - £18.50

GEO PIC 1.0 for the RX2



Programmed with the new channel frequencies required for NOAA-18.

UK - £7.00
UK non-members price - £7.00

Current Price List

	Members Prices UK	EU	RoW	Non Members UK	EU	RoW
APT Equipment						
R2ZX APT Receiver (no PSU)	210.00	214.00	222.00	224.00	228.00	236.00
R2FX APT Receiver (no PSU)	180.00	184.00	192.00	194.00	198.00	206.00
BNC Lead (0.25 metre)	4.75	5.50	6.00	6.75	7.50	8.00
UK Power Supply Unit (12 volt)	8.50	-	-	11.00	-	-
Dartcom High Quality QFH Antenna	269.00	349.00	-	289.00	369.00	-
John Silver Preamplifier (built)	35.00	36.00	37.50	40.00	41.00	42.50
John Silver Lightning Radar Board	55.00	68.00	61.00	65.00	68.00	71.00
Bias Tee	20.00	20.50	21.00	24.00	24.50	25.00
GEO-PIC 1.0	7.00	7.80	8.40	7.00	7.80	8.40
Martelec MSR40 EPROM	10.00	10.75	11.25	10.00	10.75	11.25
EUMETCast Equipment						
DVB-S USB2102 Receiver	60.00	65.00	-	70.00	75.00	-
Telestar 80 cm dish with LNB	69.50	-	-	76.50	-	-
Telestar Ku band universal LNB	12.00	13.50	-	18.50	20.00	-
Technisat Satfinder Alignment Meter	25.00	28.50	-	28.50	31.50	-
Miscellaneous						
GEO Quarterly Back Issues (subject to availability)	3.50	4.20	5.10	n/a	n/a	n/a
GEO Quarterly (PDF issues on CD) Annual compilations 2004-2009 (state years required)	8.00	8.80	9.30	n/a	n/a	n/a
GEO Membership (4 x *GEO Quarterly*)	20.00	24.00	28.00	20.00	24.00	28.00

Payment by direct bank transfer can be arranged. Please email
francis@geo-web.org.uk
for BIC and IBAN bank details

All prices are in £ sterling and include postage and packaging

Ordering and Shipping

We will ship by post, so please allow a few days for items to arrive in Europe and perhaps a few weeks for the Rest of the World.

Orders should be sent to:

GEO Shop,
44 Disraeli Road
Christchurch BH23 3NB
Dorset, England

If you are paying by credit card, you can FAX us your order to:

+44 (0) 1202 893 323

And remember, you can now order through the GEO Website using ***PayPal***.

Not a GEO Member?

GEO can provide most of the items advertised—with the exception of GEO Quarterly back-issues and CDs—to both members and non members. However, non-members cannot benefit from the discounted prices available to members.

Why not join GEO and take advantage of the discounted prices we can offer you as a member?

Subscription Rates (12 months/4 issues of GEO Quarterly) are just £20 (UK), £24 (EU) and £28 (rest of world).

TechniSat SatFinder Antenna Alignment Meter

This sensitive meter is a great help in setting up and aligning the dish for maximum signal. The meter comes with full instructions.

UK members price - £25.00
UK non-member's price - £28.50

Telestar 80 cm dish and Universal 0.2 dB LNB

(or equivalent)

This quality solid steel offset dish, designed for digital and analogue reception, is coated with electrostatic polymer. The bracket has been heat dipped and zinc treated for maximum corrosion protection. Complete with LNB.

UK members price - £69.50
UK non-members price - £76.50

NOAA Satellite Predictions

(Based on Latitude 52°N, Longitude 2°W, UT/GMT)

Compiled by Les Hamilton

NOAA 15 137.62 MHz	NOAA 18 137.9125 MHz	NOAA 19 137.10 MHz
Dec 01 03:55 05:35 15:23 17:03	01:24 03:04 12:57 14:39	01:58 03:39 11:51 13:32
Dec 02 05:11 06:51 14:59 16:39	02:53 04:35 12:47 14:28	01:47 03:28 11:41 13:21
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NOAA 15 137.62 MHz	NOAA 18 137.9125 MHz	NOAA 19 137.10 MHz
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Group for Earth Observation

Membership Application Form

PayPal

MasterCard VISA

Current Subscription Rates

United Kingdom ... £20 Europe .... £24 Rest of World £28

You can make your annual GEO Membership payment by any of the following means:

1. **PayPal** - Visit the GEO Shop web page at ***http://www.geo-web.org.uk/shop.html*** and add your subscription to your basket
2. **Credit/Debit card** - Complete your details below and mail/FAX this form to the Membership Secretary (details below)
3. UK residents may also pay by **personal cheque** or **Postal Order** made payable to "Group for Earth Observation"

I enclose my payment of ..... £

Mastercard ☐ VISA ☐ Switch ☐ Switch Solo ☐ Issue No /

Credit Card Number ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ **Expiry Date** /

If you would like to renew your subscription automatically by credit card each year, please tick the box opposite ⟶ ☐

Payment by direct bank transfer can be arranged, please email ***francis@geo-web.org.uk*** for BIC and IBAN bank details

Name (please PRINT clearly)

Address

Town/City

Postcode/ZIP Callsign

Country

Telephone Number FAX

Email Address (please print **very** clearly)

Declaration

I wish to join GEO for a period of one year.

I sign below to confirm that I have no objection to my membership details being held on a computer database and understand that these details will be used *exclusively* for internal GEO administration purposes.

Signature

Date

Your subscription is valid for one year from your date of application and entitles you to all the privileges of membership of the Group for Earth Observation, including four issues of GEO Quarterly. Please note that your subscription will commence with the issue of GEO Quarterly that is current at the time of your application. Back issues, where available, may be ordered from the GEO Shop.

Please send your completed form to:
David Anderson (GEO subs),
35 Sycamore Road,
East Leake
Loughborough LE12 6PP, UK

If paying by credit card, you may FAX a copy of this form to +44 (0) 1509 277 220

Please let us know how you learned about GEO
(Internet, Other Publication, from a Member etc...)

GEO Subscriptions
35 Sycamore Road.
East Leake.
Loughborough LE12 6PP
England. UK.

If you prefer, a photocopy or scan of this form is acceptable.

The Group for Earth Observation Limited is a company in England and Wales, limited by guarantee and having no shares. The company number is 4975597. The registered office is Coturnix House, Rake Lane, Milford, Godalming GU8 5AB.

EUMETCast On-Line Registration Guide

If you require to register as a first-time user for any of the free *EUMETCast* data streams such as MSG, NOAA AVHRR, Metop etc., or need to renew an existing subscription, this **must be done on-line**.

GEO has produced a step-by-step guide to the entire process at

http://www.geo-web.org.uk/eumreg.html

This guide also contains a direct link to the official *EUMETCast* on-line **registration form**, which can otherwise prove somewhat tricky to locate.

GEO Helplines

Douglas Deans
Dunblane, Perthshire, SCOTLAND
All aspects of weather satellites from APT, HRPT to Meteosat-8 DVB/EUMETCast systems.

- telephone:(01786) 82 28 28
- e-mail: dsdeans@btinternet.com

John Tellick
Surbiton, Surrey, ENGLAND
Meteosat-8 advice - registering for the various MSG services, hardware and software installation and troubleshooting. John will also field general queries about any aspect of receiving weather satellite transmissions.

- telephone: (0208) 390 3315
- e-mail: info@geo-web.org.uk

Geoff Morris GW3ATZ
Shotton, Flintshire, NE WALES
Geoff has lots of experience with aerial, co-ax,connectors, mounting hardware etc. and has also done a lot of work with the orbiting satellites. Geoff has been a EUMETCast Meteosat-8 user for some time and is familiar with David Taylor's MSG software; he should be able to share his experiences with newcomers to this branch of the hobby.

- Tel: (01244) 818252
- e-mail: gw3atz@btopenworld.com

Mike Stevens
Portland, Dorset, England.
Advice offered on EUMETCast (MSG and Metop) and APT.

- email: stevens312@btinternet.com

Guy Martin G8NFU
Biggin Hill NW Kent, ENGLAND
Guy is prepared to advise anyone who wishing to receive MSG/Metop using Windows 2000 or XP. Can also help with networking and ADSL router setup..

- gmartin@electroweb.co.uk

Hector Cintron
San Juan, Puerto Rico, USA
Hector is prepared to field enquiries on HRPT, APT, EMWIN and NOAAPORT

- Phone: 787-774-8657
- e-mail: n1tkk@hwic.net

Email contact can of course be made at any time, but we would ask you to respect privacy by restritricting telephone contact to the period 7.00-9.00 pm in the evenings.

Internet News/ Discussion Groups

There are a numerous Internet-based discussion groups available to weather satellite enthusiasts. You can join any of these by sending an e-mail to the appropriate address, with a request to subscribe. Indeed, a blank e-mail containing the word 'subscribe' in its Subject line is all that is required. Some of the more useful groups and their contact addresses are listed below.

APT Decoder
This is a group where users of Patrik Tast's APTDecoder can share information and problems.

http://tech.groups.yahoo.com/group/APTDecoder/

GEO-Subscribers
This is GEO's own group, where members can exchange information and post queries relating to any aspect related to weather satellite reception (hardware, software, antennas etc), Earth observation satellites and any GEO-related matter.

http://tech.groups.yahoo.com/group/GEO-Subscribers/

Satsignal
An end-user self help group for users of David Taylor's Satellite Software Tools (SatSignal, WXtrack, GeoSatSignal, HRPT Reader, GroundMap, MSG Data Manager, AVHRR Manager and the ATOVS Reader).

http://tech.groups.yahoo.com/group/SatSignal/

MSG-1
A forum dedicated to Meteosat Second Generation (MSG), where members share information about the EUMETCast reception hardware and software.

http://tech.groups.yahoo.com/group/MSG-1/

METOP
A forum for users of high-resolution AHRPT data from the MetOp satellite, available via EUMETCast.

http://tech.groups.yahoo.com/group/METOP/

AVHRR
A forum for users who download high-resolution EARS-AVHRR data from the NOAA polar orbiting weather satellites via EUMETCast.

http://tech.groups.yahoo.com/group/AVHRR/

ATOVS
A Group for discussions about using ATVOS data. Data from the whole world is available from CLASS (www.class.noaa.gov) and for an extended Europe, via EUMETCast.

http://tech.groups.yahoo.com/group/ATOVS/

Weather Satellite Reports
This group provides weekly reports, updates and news on operational aspects of weather satellites.

http://tech.groups.yahoo.com/group/weather-satellite-reports/

WXtoImg
Users of the WXtoImg software package for capturing and imaging NOAA APT can air their problems, discuss its features and ask questions about it.

http://groups.yahoo.com/group/wxtoimg-l/

The Copy Deadline for GEO Quarterly No 28 is Saturday, Oct 30, 2010

The Editor is always delighted to receive articles and images for inclusion in *GEO Quarterly*. These can relate to any aspect of Earth Imaging, especially

- Technical articles concerning relevant hardware and software
- Construction projects
- Weather satellite images
- Reports on weather phenomena
- Descriptions of readers' satellite imaging stations
- Activities from overseas readers
- Letters to the Editor
- Problems and Queries for our experts to answer

Contributions should of course be original and, where possible, should be submitted to the editor in electronic format (floppy disc, e-mail attachment, CD, DVD). But of course we will also accept handwritten and typed copy should the need arise.

Please note, however, that **major articles** which contain large numbers of satellite images, photographs or other illustrations should be submitted **as early as possible**, so that they can be prepared and made up into pages in time for publication.

Images and Diagrams
Images can be accepted in any of the major bitmap formats: **JPG, BMP, GIF, TIFF** etc. Images in both monochrome and colour are welcomed. Line drawings and diagrams are preferred in Windows metafile and postscript formats. We can also scan original photographs, negatives and slides.

Gridding, Overlays and Captions
Please note that readers' satellite images should be provided **without** added grid lines, country outlines or captions **unless** these are considered essential for illustrative purposes within an article.

If your article submission contains embedded images and diagrams, please note that you must **also submit the individual, original images**, in one of the formats described above: these are essential for page make-up purposes.

Submission of Copy
All materials for publication should be sent to the editor,

Peter Green
'Hollowtree'
Eggesford, Devon EX18 7QX, England.
Tel: 01769 580 700

The most efficient way to do this is as **email attachments** to the following address

geoeditor@geo-web.org.uk

And finally . . .
if you do have material ready for the next issue of GEO Quarterly, please submit it **as soon as it is ready**—do not wait till the deadline above: this will simply create an editorial log-jam and delay publication.

First Steps in Setting up an APT Ground Station

Les Hamilton

Perhaps you have visited one of the rallies this summer and seen weather satellite images on display. Maybe a friend with a PC has let you into the secret that you too can receive such images, in real time, from the skies. Or you may have discovered the hobby when browsing the Web. Either way, armed with a personal computer, suitable antenna and dedicated receiver for the 137 MHz band, you could be running your own ground station in next to no time and for relatively little cost.

The Satellites

There are currently three American satellites dedicated to the return of so-called Automatic Picture Transmission (APT) weather images of our planet. Operated by the National Oceanic and Atmospheric Administration (NOAA), the NOAA-12, NOAA-15 and NOAA-17 satellites occupy low Earth orbits 840 kilometres in altitude and pass completely round the planet once every 104 minutes. As the satellite orbits are fixed in space with respect to the Sun, the rotation of the Earth carries every part of the globe within the view of any of these satellites at least twice per day.

Receivers

In order to gain access to the signals from these satellites, you require a receiver tuned to the 137 MHz band. There are several options for European enthusiasts; the dedicated R2FX abd R2ZX are currently the most popular. They can be purchased from the GEO Shop. Alternatively, you can use a scanner, though performance will be compromised.

Details can be found at

http://www.geo-web.org.uk/hard.html

The fact that these satellites approach the observer, pass high overhead then recede towards the opposite horizon superimposes a significant and constantly varying Doppler effect on to their transmitted frequencies (the same as you hear when a police-car siren approaches then recedes from you). Receivers must be able to accommodate this and a bandwidth of 40 kHz is required. Both R2FX and R2ZX receivers were specifically designed to combat this but the majority of scanners were not. In addition, the R2ZX has additional circuitry which allows it to combat interference from pagers (in the UK).

Figure 1 - The popular R2FX APT Receiver

Consequently, many scanners are totally unsuitable for weather satellite imagery, and even those that are (e.g. the Icom PCR 1000) produce inferior results compared with the R2FX and R2ZX.

The Antenna

Signals from the NOAA weather satellites are transmitted with right-hand circular polarisation, and you therefore require an antenna specifically constructed to receive this type of signal. Use of a makeshift antenna will certainly allow you to hear the audio signal through your receiver, but it will not be possible to decode it into a satisfactory image.

Most APT enthusiasts utilise one of two basic designs of dedicated antenna, the crossed dipole (turnstile) or quadrifilar helix (QFH). Turnstile antennas can be bought for around £50. Commercial QFH antennas are notoriously expensive, but many enthusiasts build their own from PVC conduit tubing, junction boxes and co-axial cable.

The antenna should be mounted with clear horizons all around. The best situation as at the top of your TV mast (above the TV antenna), but loft-mounted antennas can give excellent results as can an antenna mounted on a stake in the garden, just a metre or so off the ground. So long as there are no obstructions between the antenna and the satellite, nor large nearby metallic objects to cause signal reflections, good results can usually be obtained.

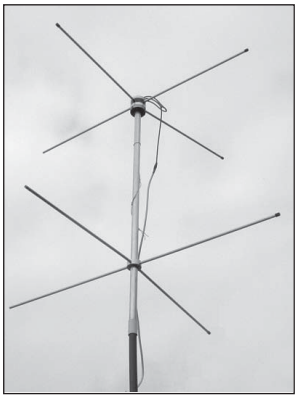


Figure 2 - A turnstile antenna

Figure 3 - A QFH antenna

The Display Unit

These days, weather satellite images are almost always displayed on the screen of a personal computer. But before you can view the weather pictures, you must first convert the received radio signals into images, and for this an interface is required. There are two options: either a purpose-built decoder in the form of a PC card or external unit, or the PC's existing soundcard. The simpler option (and also the cheaper) is the latter, and this is the route described here.

Your receiver will possess an audio output, and signals from this must be fed into the PC soundcard, generally via the line-in socket, though the microphone input is another possibility—which one you use depends on the signal level output by the receiver itself. Check which works best for your set-up.

Connecting It All Together

Once your antenna is safely mounted where you intend to deploy it, use good quality screened co-axial downlead (RG 59 is ideal) to connect it with your receiver. The receiver in turn must be connected to your PC soundcard by a length of screened audio lead. Suitable short audio leads with a jack-plug at each end are readily available at rallies and computer fairs.

Preparing the PC Soundcard for Recording

First-timers frequently stumble at the very first hurdle. Although everything appears to have been set up correctly, no audio signal is heard from the PC speakers and frustratingly, no images are produced. This outcome is almost always the result of an incorrectly configured soundcard.

By default, computer sound-cards tend to be configured for playing back audio through the PC speakers. Often the card's recording mode will not have been initialised. Do this by means of the program *Sndvol32.exe* which you can find in your *Windows* folder. If in doubt as to where to find this, click on your PC's **Start** button and select the 'Search for Files or Folders' option. Type '*sndvol32'* into the 'Filename' field, the '*Look in*' field should be drive C:—now click the 'Search' button. When the filename *Sndvol32.exe* appears in the browser window, double-click on it to open it. *Sndvol32* first appears with the words 'Volume Control' in its title-bar. Click the **<Options>** menu, followed by **<Properties>** to reveal the properties screen. Click the 'Recording' radio-button, make sure that the 'line-in' option is ticked in the 'Show the following volume controls:' browser. Finally, click OK to reveal the Recording Control panel (figure 5).

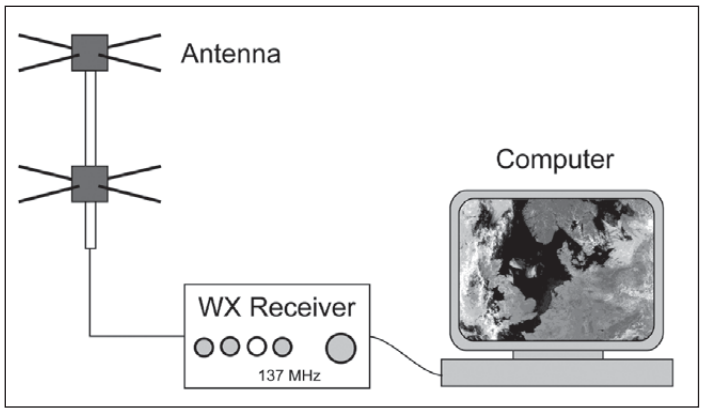


Fig.4 - How the units connect

The usual input channel for recording from a wxsat receiver is line-in, so this must be activated by firstly checking the 'Select' box in the 'Line balance:' panel, and then elevating the volume control slider to mid-scale (this may require more careful adjustment later). However, depending on the input levels of your soundcard, you may prefer to make use of the microphone input channel instead.

Software

The simplest package, but the most popular among beginners, is *WXsat* authored by Christian Bock 'way back in 1995. The program's appeal lies in its ability to decode the satellite transmissions into images in real time, while simultaneously recording them on to your hard-drive in the form of WAV files. Although the generation of images requires a degree of experimentation and effort by the user, recording WAV files is relatively straightforward.

Open Wxsat's **<Recording>** menu and select the third item from the foot, labelled 'Test'. This reveals a window flanked by a grey line at both top and bottom. These two lines represent the maximum permitted amplitude for an incoming satellite signal. Exceed these levels and the signal will be 'clipped', masking out much of the bright cloud detail as full white. This level must be adjusted during reception of a live satellite signal, something which may be accomplished by adjusting the *Sndvol32.exe* volume slider position, or by placing a variable potentiometer (volume control) into the audio line feeding the soundcard. The maximum amplitudes in the signal from the receiver must not be allowed to break

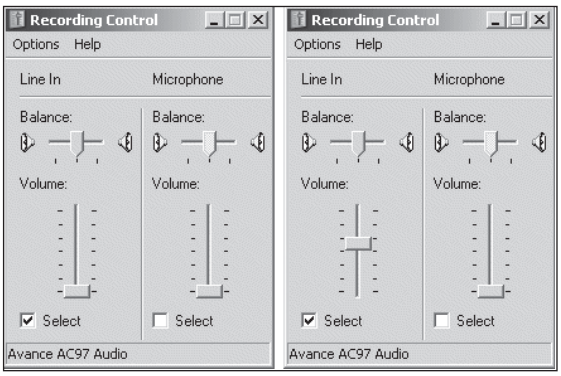


Figure 5
The soundcard recording control with the line-in input muted (left) and active (right).

either grey line.

Figure 6 shows part of a NOAA wave sample with a peak-to-peak value of ± 0.7, which is more than adequate for the production of good images. Figure 7 is an image produced from the same NOAA-17 signal as shown in the test screen below. Notice how the image displays a full range of tones from brightest white through full black and that both land and cloud show excellent tonal variation. Figure 8 shows what happens if the recording volume is set too high; most of the cloud structure in the visible (left) frame has been lost because of 'clipping'. For the same reason, the infrared image (right) is almost devoid of detail. Although this is an extreme example, for the purpose of illustration, readers do frequently submit images with very washed-out clouds like those in figure 8.

The main reason for this would seem to be an attempt to enhance land detail, which is often quite dark, by increasing the input level. This practice is not recommended, as it destroys most the cloud detail. Instead, the balance between light and dark tones should be adjusted after the image has been created, using the 'gamma' feature of an image editing program such as *Paintshop Pro' or 'Photoshop'*.

The Usefulness of WAV Files

To actually record a WAV file while a screen image builds up you must select the appropriate decoding mode. Click the **<Parameters>** menu in *WXsat* to reveal the default list of decoding options. Start by selecting the topmost item from the list; this will produce twin NOAA images as shown in figure 7, with a visible light image on the left and an infrared image to its right. Other options on the list permit decoding of individual visible or infrared images, as well as allowing the user to combine them as a false-colour image.

To initiate a recording session, select **<Start at Subcarrier>** from the **<Recording>** menu, followed by **<Save Bitmap and Wave>** to prime *WXsat* to record a WAV file as it displays the image each time it detects a NOAA weather satellite APT signal.

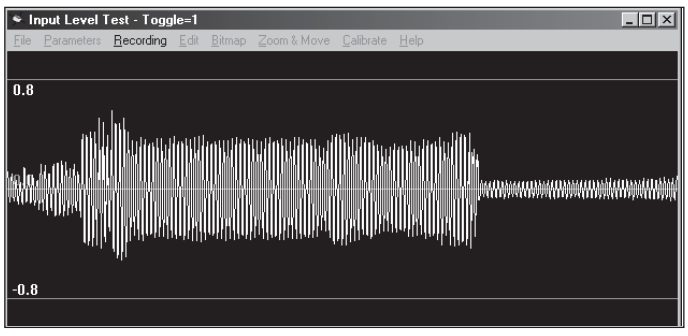


Fig.6 - Wxsat's recording-level test screen

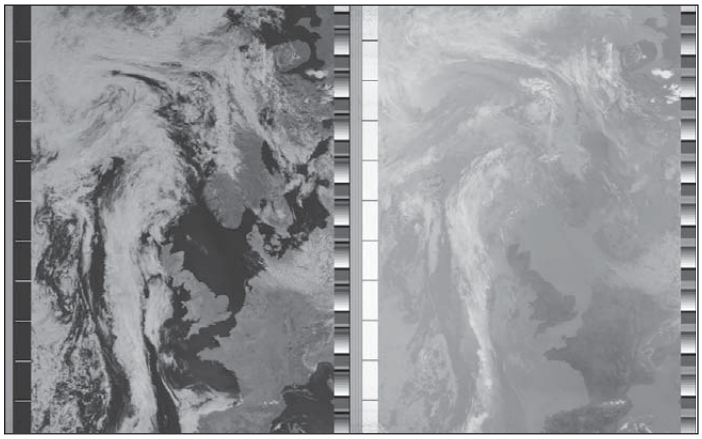


Figure 7 - NOAA 17 - 11:12 UT on July 13, 2003

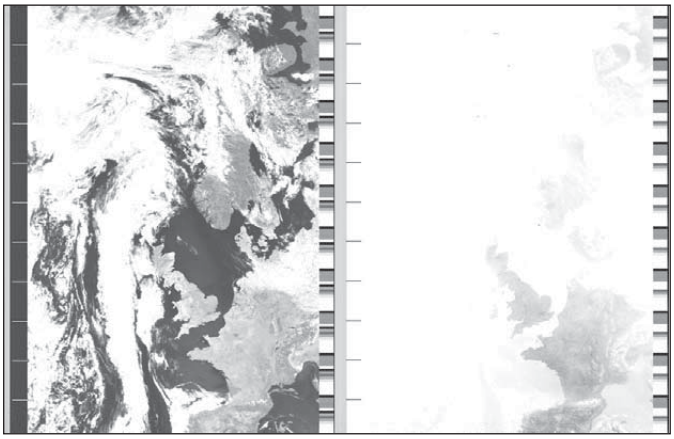


Figure 8 - The same image, showing the effects of 'clipping'.

The great advantage of saving WAV files as well as the actual bitmap images is that the WAV file may be repeatedly decoded through Wxsat (or another program such as Satsignal or Wxtoimg). This allows parameters to be adjusted until you judge that the final image is the best that can be achieved.

Help with Wxsat

The *WXsat* program comes complete with an extensive 'Help' file extending to more than 350 kb in size. This contains dozens of pages of information, many with supporting diagrams and screenshots to help you customise the program to meet your requirements.

WXsat may be downloaded from the HF-FAX site at

http://www.hffax.de/inst257e.exe

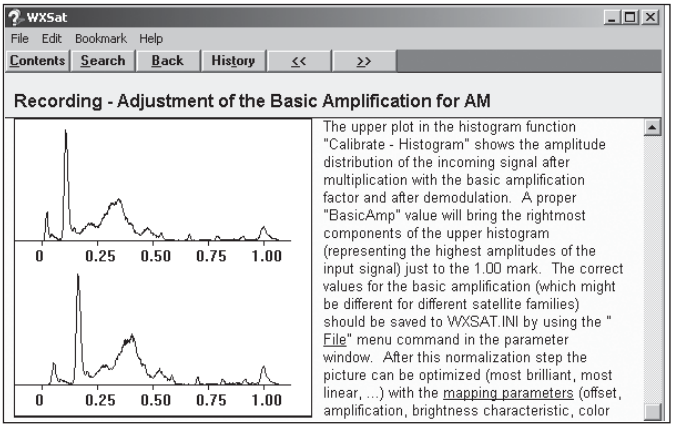


Figure 9 - A WXsat help screen dealing with histograms

Results of using an SSD as a System Drive

Guy Martin

Modern home computers have progressed enormously in the last decade, yet all still rely on a mechanical device, a disk driven at high speed by an electric motor. I refer of course to the hard disk which is an essential part of any home computer. These hard disks have grown in size while dropping in price, a 250GB device being available for about £40 or less.

Recently, SSDs (Solid State Drive) have become available on the consumer market and whilst still expensive they are now within the reach of the home consumer's pocket. The SSD comes in two flavours: SLC (Single Layer Cell) and MLC (Multi Layer Cell). SLC are very fast and very expensive whereas MLC are slower and cheaper, though still expensive compared to a normal hard drive. However, because of the limitations of the SATA interface, the actual performance of the two types in a home computer is similar.

I organize my main MSG processing PC into several partitions. I use one drive (drive 0) for the C & D drives for the system and applications respectively. Drive 1 carries partitions for other data such as weather files on drive W. The reasons for doing this are various. I can use disk imaging software to save the system partition in the event of a crash the file of which is not bloated out with applications. Also, after a re-install, all the applications are there on the D drive and most work straightaway after a registry restore.

I managed to source a *Transcend* 32GB MLC SSD from Japan (my son works in Japan) where they are about £20 cheaper than in the UK. The SSD is 2.5in format so an adapter kit is needed (two metal cheeks) to fit into a 3.5in bay. I disk imaged my C & D partitions and copied them onto the SSD so that I had an identical system to before.

Interestingly, when using XP, I had two equal partitions of 15GB. Changing to Windows 7 I had to increase the system drive to 20GB as 15GB was nearly full. However 10GB is fine for applications as I am not a fan of bloatware.

Upon re-booting the first thing I noticed was how quiet my PC was, followed immediately by the speed of booting up which I estimated was about half the time. Shutdown was also much quicker. This should be expected of course as there are no mechanical bits to whiz across the spinning wheel. Now it was time for some real figures as opposed to just subjective impressions.

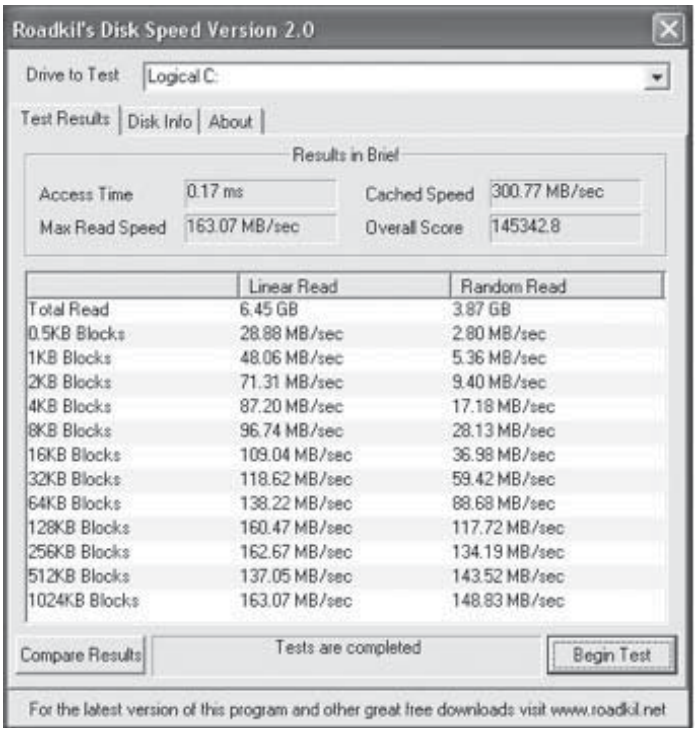
I ran some speed tests using some free software (Roadkil's DiskSpeed) . The SSD carrying partitions C & D against a Seagate Barracuda 7200.7 80GB used for the other partitions. The results are shown here, as you can see the maximum throughput for the SSD was 160MB/sec, this compares favourably with the published figures from Transcend of 150MB/sec. The Seagate Barracuda staggered up to 74MB/sec.

I also ran a temperature check from the 'SMART' information. The barracuda started at 31C rising to 37C where it levelled off. The SSD read zero.Power consumption is less, only 5v required (no motor) 2.4W write, 0.7 W idle. The Barracuda uses 2.4W at 5v but a further 6.7W at 12v.

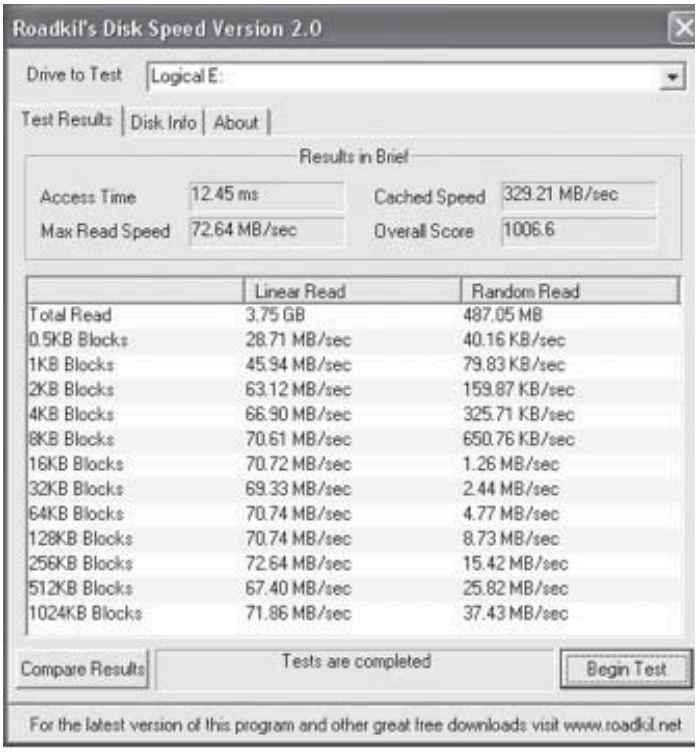
Transcend as expected have an informative web site ***http://www.transcendusa.com/Products/ModDetail.asp?ModNo=177&SpNo=-100&LangNo=0***

With a full data sheet here:
http://www.transcendusa.com/support/dlcenter/Datasheet/SSD25S-JMI%20Datasheet%20v2.5.pdf

SSD Test:



Barracuda Test:



Of course Transcend are not the only sources of this product and hopefully with some competition and volume production prices with fall.

Prices for a 32GB Transcend SSD are typically £85 - £90. Same price you paid for your first CD Rom drive, so is it a useful and essential piece of equipment or just a 'nice to have'. Well it is certainly nice to have. It is quieter, faster and uses less power. I have been running for a year now with no problems and it is now supporting Windows 7. It comes with a 2yr warranty, data retention is 10yrs and the MTBF is 1000000hrs.

The instructions on my drive were of course in Japanese Kanji script, but who reads instructions anyway ! One interesting line read "This technology will be performing when your other technology has failed". We tried to determine whether the hardware would outlast the computer or the SSD concept would replace current hard drive technology. My Son's wife replied that the Japanese didn't really translate fully into English. The reason for this question is that recently questions have arisen for an SSD to be used in place of a RAM disk with all excessive read writes that would occur, a SSD can be an expensive fix to a no problem, RAM is much cheaper and this could be a case of 'if it ain't broke don't fix it. I guess that it could but don't quote me. There have also recently been rumours of a Tellique software version not requiring a ram disk in which case this would be a moot point.

On my last trip to Japan I purchased another SSD for my receiving machine System and Apps drive following the good experience with the previous one. We will probably have a while to go before we can match the 1Tb hard disks now available in spinning wheel technology but with the ever increasing rate of advance of technology those days cannot be far away.

TS8GSSD25S-S
TS16GSSD25S-S/M
TS32GSSD25S-S/M
TS64GSSD25S-S/M
TS128GSSD25S-M
TS192GSSD25S-M

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- Shock resistance

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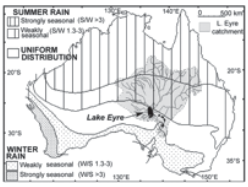
Side	Millimeters	Inches
A	100.30 ± 0.40	3.949 ± 0.016
B	69.85 ± 0.20	2.750 ± 0.008
C	9.50 ± 0.15	0.374 ± 0.004

Transcend Information Inc. 1

V2.5

Will Lake Eyre Refill ?



Ken Morgan

GEO Quarterly 24 contained an Article titled "Lake Eyre Fills – an Australian View". During 2010 much more rain has fallen, and the question is "Will Lake Eyre Refill" ? There is so much discussion by all parties with different agendas and hopes that it is difficult to provide a definitive answer. The Tourist Industry and those interested in wildlife are sure that water will reach and refill the lake with the accompanying explosion in wildlife, vegetation and tourism. Water engineers and those wishing for more irrigation and drinking water hope that the water will take a slightly different path so enabling the filling and flowing of the Darling and Murray Rivers.

On top of the enormous rains of last year, there have been an equally great downpours this year, with towns flooded, River/Creeks breaking banks and surface water spreading along the land & desert.

A typical newspaper heading of January 3, 2010 states "Floods force evacuations in central NSW. Floodwaters have force hundreds of people to evacuate their homes in Northern NSW, as severe thunderstorms hit parts of the Northern Tablelands and North west slopes".

Last year the rains seemed more concentrated in Northern Territory and slightly less in Northern Queensland. This year slightly more to the east of Northern Queensland. This means that as the waters the "roll" southwards, the direction will tend to favour filling the Darling River and its tributaries perhaps rather than the Diamentina River and Cooper Creek, although there are reports indicating that water is flowing in these waterways .

An image from NOAA-19. (Image 1 opposite) was produced from a pass on April 1st,2010. It was northbound, commencing at 4.44 GMT and of 15 mins. 47 secs duration. Decoding software was Wxtoimg. Enhancement, MSA. The options of overlays of Rivers and lines of lat. / long were included. Image 2 shows a selected portion of image 1, magnified by 2, and shows areas where the floodwaters are moving. Both images are worthy of study, and comparison with similar images in GEO Q.24 pages 20 &21.

Noteworthy are the "outskirts" of cyclone Paul in the vicinity of Cape York and the Gulf of Carpentaria.

Diminished evidence of Lake Eyre, but evidence of areas of water enclosed by Lats. 25 & 30 and Long's 140 & 145. See the magnified image where names have been added and the image scanned. It probably is no accident that areas of water are shown at the turning points of Cooper Creek.

Note where the overlaid Diamentina River and Cooper Creek enter the Lake Eyre system. (Thanks for your accuracy Craig. You can see why I asked about putting the names of Rivers on overlays)

The curved band of cloud coming from the south-west seemingly "hinged at the Antarctic". This is very typical of weather changes in Southern Australia.

The Diamentina River, Cooper Creek and their tributaries both flow into to Lake Eyre. A complex of Rivers, Creeks and swamplands including the Paroo,Warrego and Barwon flow into the Darling which in turn flows into the Murray River via the Mindee Lake system.

> *What does this water flow achieve, if it is in sufficient quantity ?,*
> *Makes the Murray River flow, defeating algal bloom .*
> *Provides fresh water for the City of Adelaide.*
> *Allows irrigation of the great Murray-Darling foodbowls, the Riverina, Orchards and farms on the North & South banks of the Murray. This largely determines whether Australia becomes a net exporter or importer of foodstuffs.*

The Murray empties into Lakes Alexandrina and Albert. (Image 3)

These have been fresh water lakes and examination of the image shows a complex Barrage System, designed to allow fresh water exit to the Coorong, thence to the Southern Ocean. The barrage system is designed to keep salt water out of the two lakes in the event of low fresh water flow and high tides. Note that Adelaide takes its drinking water from the lakes. The Coorong waters are brackish and another great place for birds and wildlife to flourish.

Thus you can see that there are compelling reasons for wishing the northern floodwaters to eventually find their way to the Murray River.

Australia is capable of growing large quantities of food, if there is sufficient water when and where it is needed. There have been drought conditions in food growing and city areas. Irrigation has been curtailed and homes placed under stringent water restrictions. Desalination plants have been built and a pipeline constructed to bring water from the Murray to Melbourne - midst great resentment. There have been large projects to replace open irrigation channels with pipes, so preventing evaporation.

State Premiers and Federal Politicians are arguing about current national water agreements and who will benefit from any water largess.

During collection of information for this article I was not surprised to learn that under The Water Act of 2007, Government has decreed that the CSIRO and The Bureau of Meteorology are required to collect, hold, manage, interpret and disseminate Australia's water information. This has been termed "A Water Information Alliance"

The collection of information and writing of this article have proved that a liaison with such a duty is very necessary in Australia. Hard facts on the quantity of rain falling, where it has fallen and what path the flow is likely to take are vital in irrigation and other consumption/ conservation decisions.

This Alliance, much better than me would be able to determine whether Lake Eyre is likely to fill again !

I wonder whether other countries have a similar organization to help in the making of water decisions .

There follows a list of websites which will provide Tourist pic's, info about Lake Eyre, The Murray-Darling Basin Authority and info. about the Csiro & Bureau of Meteorology Alliance. Plus much more.

http://goinoffsafaris.com.au/water-starts-flowing-into -lake-eyre/
http://www.csiro.au/partnerships/wirada.html
http://www.abc.net.au/pm/content/2010/s2787694.htm
http://www.bom.gov.au/water/regulations/waterAct2007AuxNav.shtml
http://www.bom.gov.au/water/regulations/wdtf/index.shtml
http://www.wrightsair.com.au/floodwaternews.htm
http://www.mdba.gov.au/water/waterinstorage/southern?run-date=2010-0402

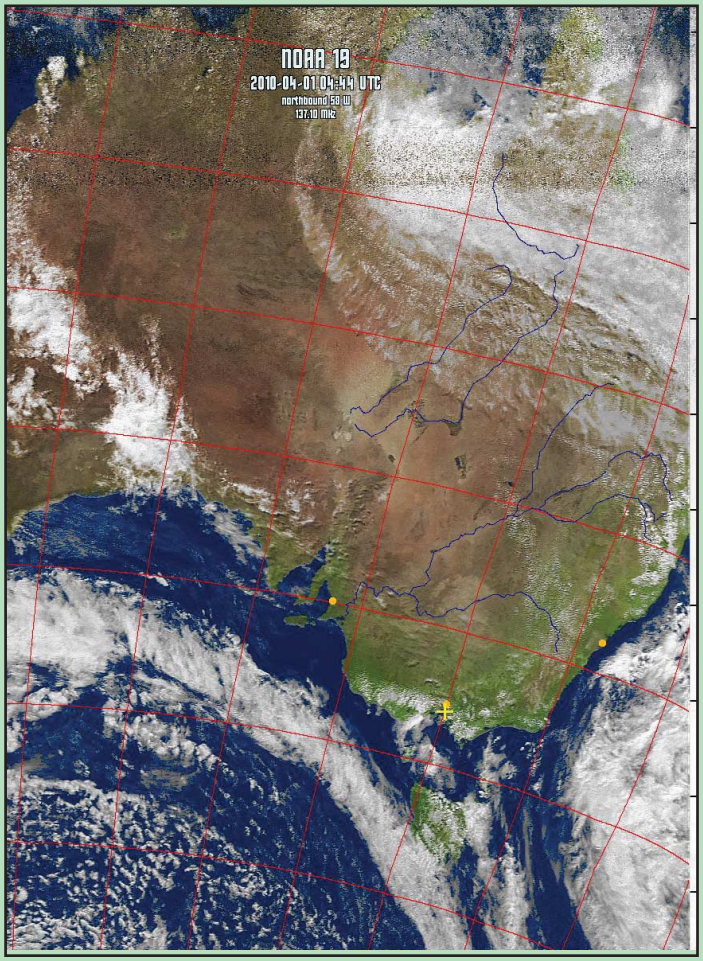
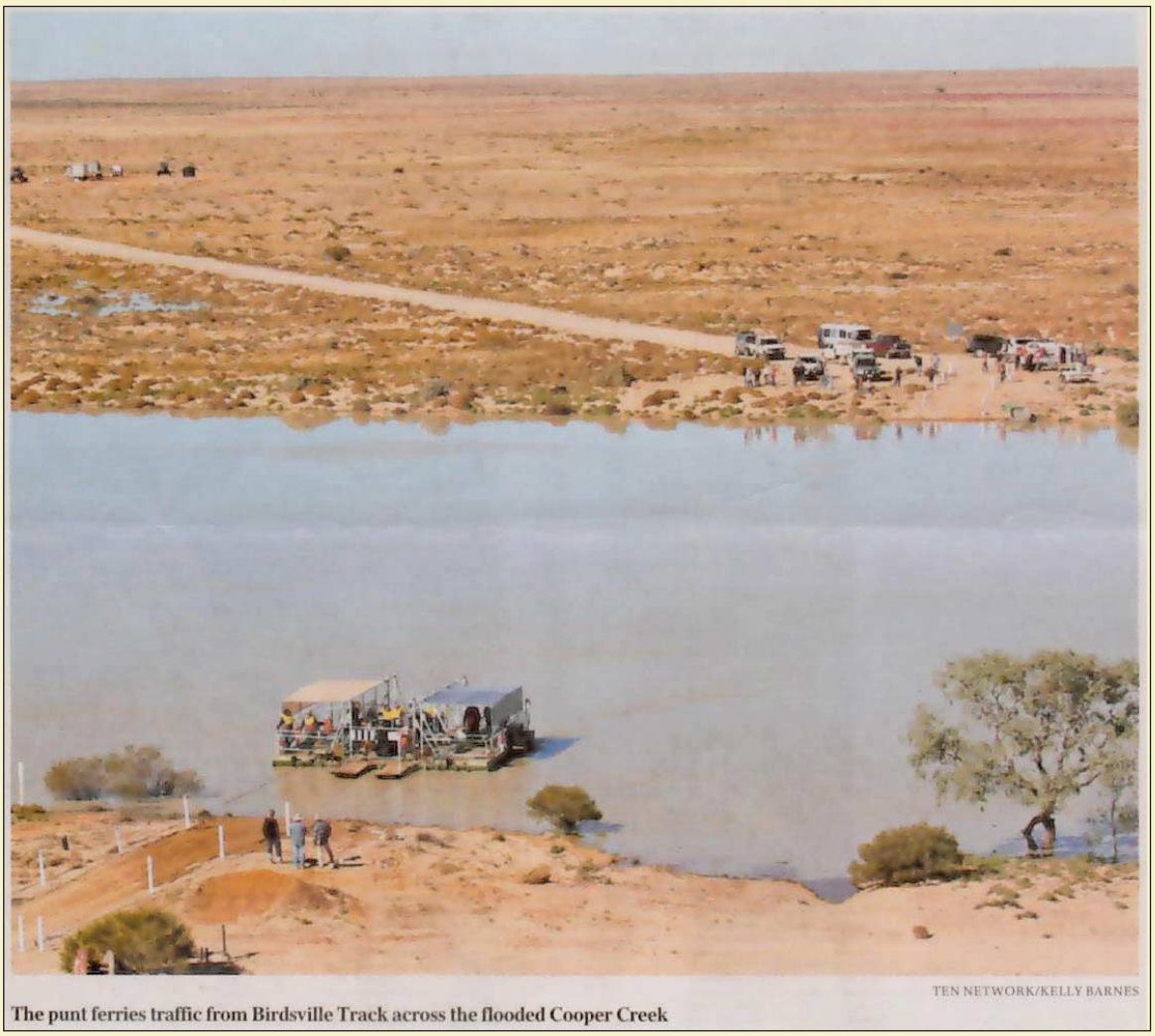


Image 1

Image 2

The Murray empties into Lakes Alexandrina and Albert. (Image 3)

The flood spreading over the plain about 10km downstream (west) of the full flood at the Birdsville Track crossing. June 9, 2010 Picture John Bailey

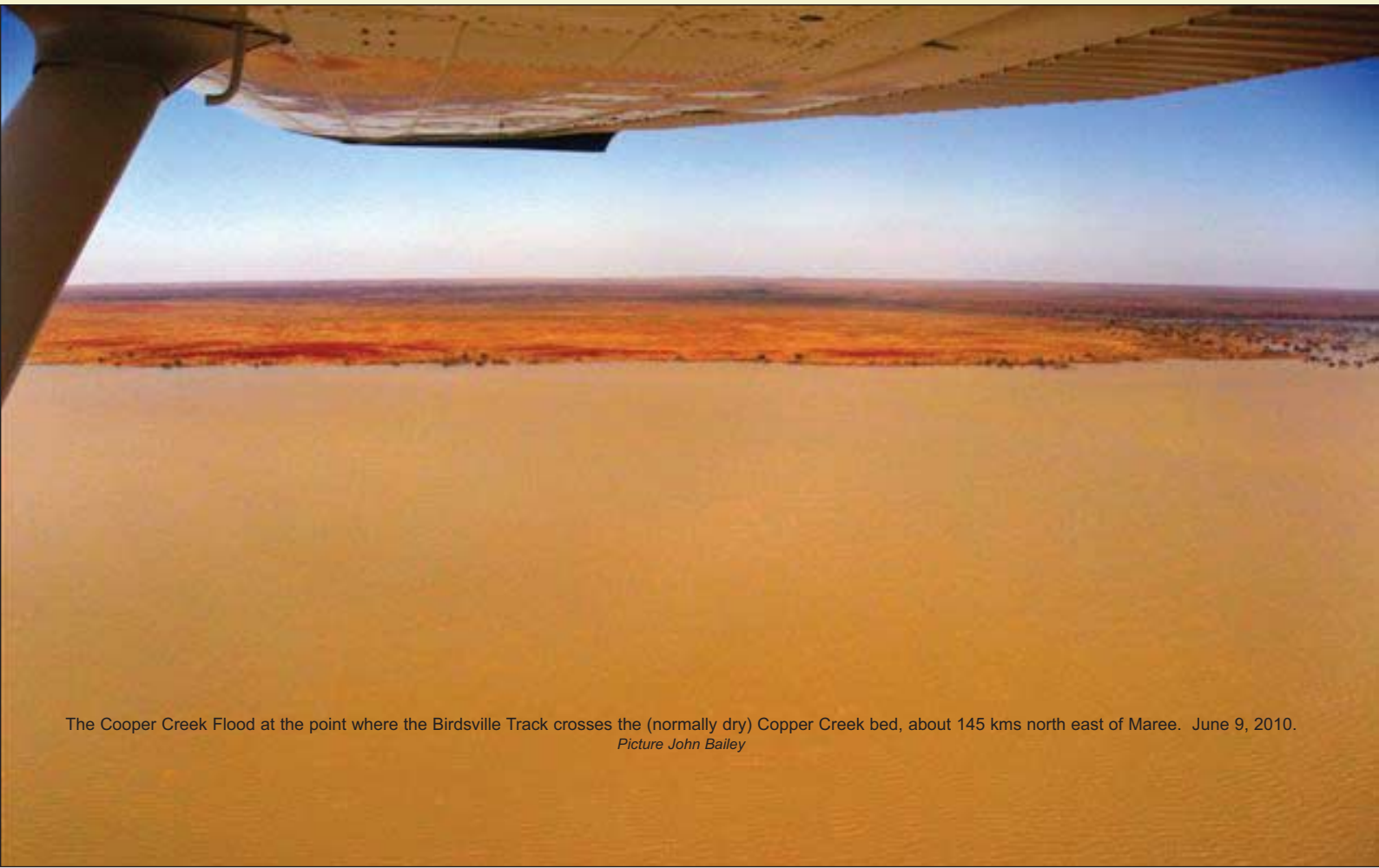


TEN NETWORK/KELLY BARNES

The punt ferries traffic from Birdsville Track across the flooded Cooper Creek

Birdsville Track crossing, at Cooper Creek. Normally dry , now ferry in service after 40 years of non-operation.
June 9 2010. *Picture John Bailey*

Here Cooper creek enters Lake Eyre North. Lake Eyre is 16 metres below sea level June 9th 2010. *Picture John Bailey*



The Cooper Creek Flood at the point where the Birdsville Track crosses the (normally dry) Copper Creek bed, about 145 kms north east of Maree. June 9, 2010.
Picture John Bailey

Gibraltar Travels

Francis Bell

Recently my travel duties took me briefly to southern Spain. I found the plan attractive because I particularly wanted to visit the Alhambra Palace at Granada, plus Gibraltar. I wanted to see the Alhambra at first hand to examine the wall decorations within the palace. I had studied the mathematics and symmetry of these decorations many years ago at university but never set eyes on the full set of symmetry examples displayed in this palace.

My other target was Gibraltar which was about 60 km from where we were staying. A car hire and a one day visit fulfilled my ambitions. The rock, as a geographical feature, surprised me because it's a distinctive outcrop rock and major feature reaching a height of $426\mathrm{m}$ in an otherwise gently rolling coastal area.

We spent a varied day visiting the tourist High Street, the walled area of the town and then driving as far as possible up the rock for viewing areas and wildlife.

Although I was not looking for any special meteorological features I did notice when walking along the High Street and residential areas the sky was cloudy. This contrasted with our inward journey which had clear skies and sunshine all the way.

While up at the viewing points I noticed the rather unusual cloud formation above the rock. On the windward eastern side of the rock there was the sudden formation of a cloud while on the western leeward side the cloud was disappearing within a few seconds. I took several photographs of this cloud but the images I recorded did not quite do justice to the dynamics of what was happening. It looked to me like the airflow I have seen across an aircraft's upper wing surface when in flight, the low pressure creating visible condensation. Perhaps a GEO member will be able to explain the Gibraltar phenomenon and whether this is just a micro example of weather systems flowing over mountainous regions?

Please submit you thoughts either to:
francis@geo-org.uk or editor@geo-web.org.uk

GEO Quarterly Updates

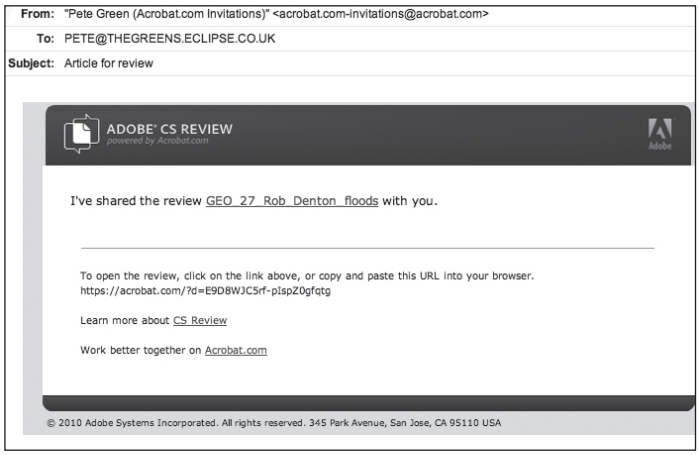
Peter Green

As Les Hamilton will tell you, making up and editing the Quarterly takes many hours.

Although this can become a chore, if you the members enjoy the magazine then it's worth it. However I am trying to find ways to make our lives easier when you have taken the trouble to send an article in for inclusion in the Quarterly.

One service that I have been trialing with this issue of the Quarterly is called CS Live. This allows me to post copy to the author for proofing straight up to the internet from the make-up program to Acrobat.com.

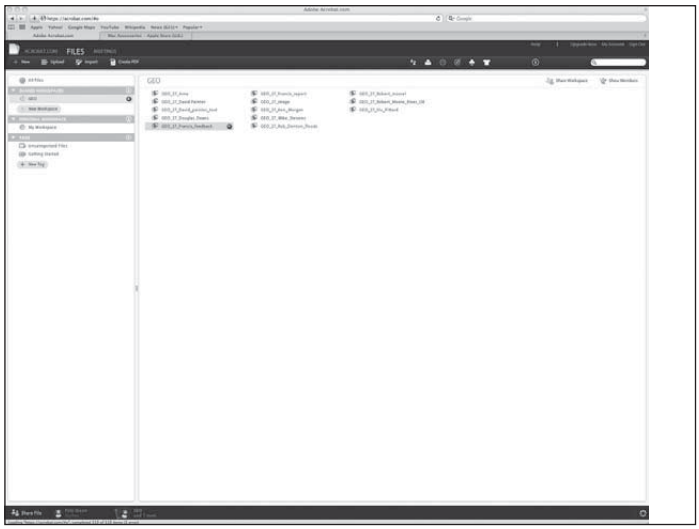
This saves sending PDF's backwards and forwards as we correct things in your articles.



Email invitation with a link to your article for review

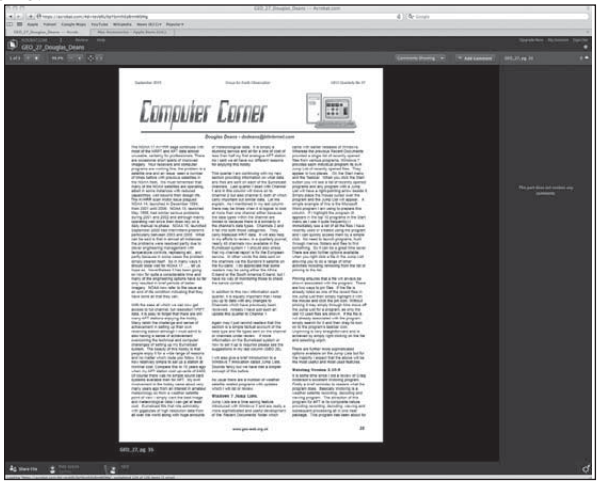
The first thing you will get is an email with a link to Acrobat.com (as above) asking you to review the article. If you have not registered before, then it will ask you to. This is free of charge and only takes a short time.

Once registered and logged on you will be presented with the shared folder where you article is.



Acrobat.com shared folder where your article is held for review

Just click on your article and it will be presented to you as a PDF contained in a web page. If it is more than one page, there are up/down arrows to move between them. You can also enlarge the whole page by clicking the + sign, - to reduce the size.



Your article displayed ready for proofing

Should you see something that you wish to correct or change, just click where you require the change and you will be presented with a pop up box as shown below. Your name is shown in the top left, so I know who has made the change.

Enter the changes and click save on the right hand side. You can do this as many times as required.

Once you are happy with your proofing, just log out.

When I open my layout program for the magazine, I am automatically signed into the service. It shows me that you have made changes to your article, with your changes highlighted. I can then edit and if necessary send you another link if required.

Believe me this saves hours my end and will save you getting numerous emails, where you have to respond saying things like, page 1, paragraph 3, fourth word etc etc and so it would gone on until we are happy.

Pop up screen where you would like to make a change

Battery Powered APT in the Field

Francis Bell

For many years I have been a member of the Three Counties Amateur Radio Club (TCARC) this is my local radio club. In addition to regular twice monthly meetings each year there is a field day, sometimes a field weekend. The location for this event is high on the South Downs in Hampshire, it is chosen for its clear view of the sky with its potential for good distance radio propagation - but that also means horizon to horizon APT reception for anyone willing to try.

I usually attend this event but in addition to the amateur radio activities I use the venue to experiment with APT reception. Away from home you have to plan carefully and be resourceful. At home I have the resources of a fixed antenna and mains electricity and several computers also time to fix things if they are not perfect, not so in 'the field'. Regular readers will know that I take my APT equipment when travelling abroad so any opportunity to experiment away from home is a useful learning experience.

At radio and computer rallies usually there is mains electricity available but this was not the case at the Newbury Rally which GEO recently attended, effectively we were in a field! Although on the stand we ran live EUMETCast reception for a full day using a DVB World receiver and David Simmons' laptop computer it was all done from a 12V car battery. I took interest in the interface that David was using to convert the 12V up to 18V for the laptop and a similar device to supply 9V to the DVB World receiver.

Now for the brief story of my own laptops. I have two laptop computers both rather old and in both cases their batteries have died. Because of the expense I refuse to buy replacement internal batteries however because of my Newbury experience have bought as an alternative a 12V car battery converter similar to the one David was using at Newbury. See the photograph below and costs about £20.

In possession of my new power adaptor I was confident enough to take it to the TCARC field day to power my laptop from my car battery. During the afternoon everything went well and I recorded four NOAA APT images over a period of about five hours of running the system and displaying images.

Some cautionary notes.

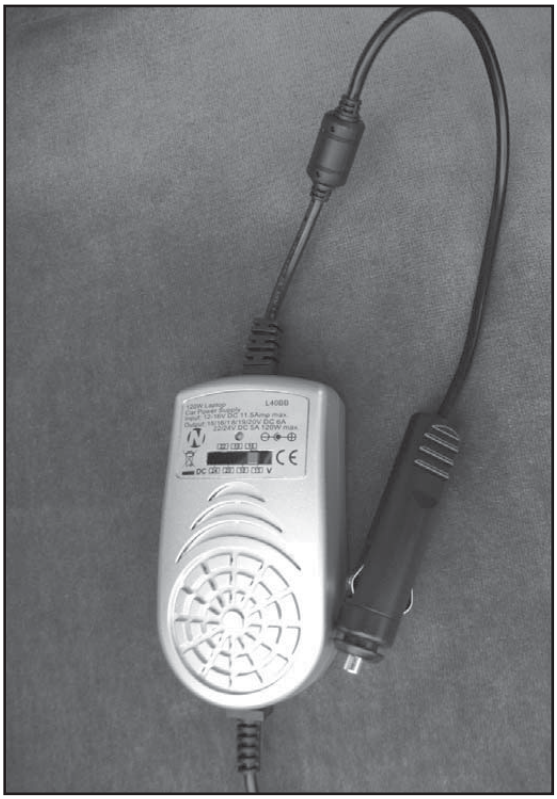
At the end of the day with everything packed away I tried to start my car.

The car would not start because of a flat battery. Resourcefully other club members on the site brought over a mobile 12V power supply and with jump leads the car started at the first turn of the key. However, I was pleased I was not on my own in a remote location with this experience.

I had not recognised the significance of the 12V power adaptor being plugged into the car's cigarette lighter socket. The socket is a useful source of a 12V power supply but in the case of my car it's only live when the ignition is turned on, hence over a period of five hours the car's battery became nearly discharged.

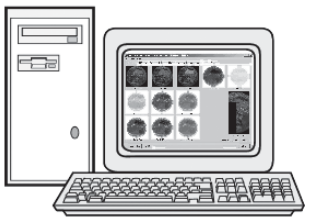
Subsequently I have checked the power consumption of my 'IBM Think Pad' computer and its specification quotes it at 72W. Well that's okay when running from the mains but is demanding from any internal or external battery. I will be more circumspect with use of my car battery in future and will connect my voltage interface box directly to the battery with all car circuits remaining off this should prevent future problems when working away from home.

My APT station in the field. It consisted of my home built 137 MHz APT receiver which only consumes 100mA, my home made turnstile antenna and the power hungry laptop: all powered by the car battery.



My laptop car interface from Maplins but I believe they generally available from electrical suppliers.

Computer Corner



Douglas Deans - dsdeans@btinternet.com

The NOAA 17 AVHRR saga continues with most of the HRPT and APT data almost unusable, certainly for professionals. There are occasional short spells of improved imagery. Your receivers and computer programs are working fine, the problem is a satellite one and an issue seen a number of times before with previous satellites in the NOAA fleet. We must remember that many of the NOAA satellites are operating, albeit in some instances with reduced capabilities, well beyond their design life. The AVHRR scan motor issue plagued NOAA 14, launched in December 1994, from 2001 until 2006. NOAA 15, launched May 1998, had similar serious problems during 2001 and 2002 and although mainly operating well since then does rely on a daily manual re-phase. NOAA 16, launched September 2000 had intermittent problems particularly between 2003 and 2005. What can be said is that in almost all instances the problems were resolved partly due to clever engineering management with temperature controls, rephasing etc., and partly because in some cases the problem simply cleared itself. So in many ways it should bode well for NOAA 17 ….. let us hope so. Nevertheless it has been going on now for quite a considerable time and many of the engineering options have so far only resulted in brief periods of better imagery. NOAA now refer to the issue as an end of life condition indicating that they have done all that they can.

With the ease at which we can now get access to full channel, full resolution HRPT data, it is easy to forget that there are still many APT stations enjoying the hobby. Many relish the challenge and sense of achievement in setting up their own receiving station although I must admit to also having a sense of achievement overcoming the technical and computer challenges of setting up my EUMETCast system. The beauty of this hobby is that people enjoy it for a wide range of reasons and no matter which route you follow, it is now relatively simple to set up a station at minimal cost. Compare this to 15 years ago when my APT station cost upwards of £400. Of course there was no simple sound card systems available then for APT. My own involvement in the hobby came about very many years ago from an interest in amateur meteorology so from a weather satellite point of view I simply want the best image and meteorological data I can get at least cost. EUMETCast fills that role admirably with gigabytes of high resolution data from all over the world along with huge amounts of meteorological data. It is simply a stunning service and all for a one of cost of less than half my first analogue APT station. As I said we all have our different reasons for enjoying this hobby.

This quarter I am continuing with my new section providing information on what data and files are sent on each of the EUMETCast channels. Last quarter I dealt with Channel 1 and in this column will move on to Channel 2 but also channel 5, both of which carry important but similar data. Let me explain. As I mentioned in my last column there may be times when it is logical to look at more than one channel either because the data types within the channel are limited or because there is a similarity in the channel's data types. Channels 2 and 5 fall into both those categories. They carry Meteosat HRIT data. It will also help in my efforts to review, in a quarterly journal, nearly 40 channels now available in the EUMETCast system ! I should also stress that my channel report is for the European service. In other words the data sent on the channels via the Eurobird 9 satellite on the Ku-band. I do appreciate that some readers may be using either the Africa C-band or the South America C-band, but I have no way of monitoring those to check the bands content.

In addition to this new information each quarter, it is equally important that I keep you up to date with any changes to Channels which have previously been reviewed. Already I have just such an update this quarter to Channel 1.

Again may I just remind readers that this section is a simple factual account of the data type and file types sent on the channel or channels under review. If more information on the EUMETCast system or how to set it up is required please see the suggestions in my last column (GEO 26).

I will also give a brief introduction to a Windows 7 innovation called Jump Lists. Sounds fancy but we have met a simpler concept of this before.

As usual there are a number of weather satellite related programs with updates which I will list or review.

Windows 7 Jump Lists.

Jump Lists are a time saving feature introduced with Windows 7 and are really a more sophisticated and useful development of the 'Recent Documents' folder which came with earlier releases of Windows. Whereas the previous Recent Documents provided a single list of recently opened files from various programs, Windows 7 provides each individual program its own Jump List of recently opened files. They appear in two places. On the Start menu and the Taskbar. When you click the Start button you will see a list of recently opened programs and any program with a Jump List will have a right-pointing arrow beside it. Simply place the mouse cursor over the program and the Jump List will appear. A simple example of this is the Microsoft Word program I am using to prepare this column. If I highlight the program (it appears in the top 10 programs in the Start menu as I use it quite frequently) I immediately see a list of all the files I have recently used or created using the program and I can quickly access them by a simple click. No need to launch programs, hunt through menus, folders and files to find something. So it can be a great time saver. There are also further options available when you right click a file in the Jump List allowing you to do a range of other activities including removing from the list or pinning to the list.

Pinning ensures that a file will always be shown associated with the program. There are two ways to pin files. If the file is already listed as one of the recent files in the Jump List then simply highlight it with the mouse and click the pin icon. Without pinning it may simply through time move off the Jump List for a program, as only the last 10 used files are shown. If the file is not already associated with the program simply search for it and then drag its icon on to the program's Taskbar icon. Unpinning is very straightforward and is achieved by simply right clicking on the file and selecting unpin.

There are further more sophisticated options available on the Jump Lists but for the majority I expect that the above will be the most useful and most used features.

WxtoImg Version 2.10.9

It is some time since I did a review of Craig Anderson's excellent WxtoImg program. Firstly a brief reminder to readers what the program does. Basically WxtoImg is a weather satellite recording, decoding and viewing program. The attraction of this program for APT is its composite nature providing recording, decoding, viewing and subsequent processing all in one neat

package. This program has been about for a long time but as always Craig keeps it up to date with new options being added from time to time. Version 2.10.9 released in April 2010 has many additions too numerous to mention but some of the more important are listed below :-

New "thermal" enhancement.
Improves RSFX calibration (and image colour).
Adds independent setting of minimum recording elevation for north and south.
There is an independent setting of W and E minimum/ maximum satellite elevation for recording.
Wide-area composite image creation using pristine images from multiple ground stations.
Improved presentation of telemetry data in all enhanced images.
Support for temperature scale on thermal enhancements.
Supports more GPSS, rotor controllers, and receivers.
Performance improvements for web page creation and composite image generation.
Auto crops MSA/HVC/HVCT images when satellite changes sensors.
Improvements for pristine image quality and image quality of projections.

As I said there are too many new things to fully list and that is on top of an already well proven and sophisticated program. If you are into APT then you must try this.

To learn more about the program and to download it go to :-
http://www.wxtoimg.com/

EUMETCast Data Channel 2.

This channel carries the Primary High Rate SEVIRI data from the geostationary satellite located at 0°. For the moment the primary satellite is Meteosat 9, also known as MSG 2 being the second of the Meteosat Second Generation of satellites. The original Meteosat range was Meteosat 1 to 7 and indeed Meteosat 6 and 7 are still operating on the IODC project. To help with a better understanding of the data and file types let me give a brief description of what is provided by the satellite on this channel.

The Meteosat Second Generation (MSG) satellites produce SEVIRI image data in the form of both High and Low Rate SEVIRI data. This real-time data is processed to level 1.5 to provide correction for radiometric and geometric non-linearity before distribution to the end-user. Considerable ancillary information is provided with the data to allow the user to calculate the geographical position and the radiance of any pixel. Eleven of the twelve channels provide measurements with a resolution of 3km at the sub-satellite point whilst the High Resolution Visible channel (HRV) provides measurement to 1km at the sub-satellite point.

Briefly the features of the High Rate SEVIRI image data service on Channel 2 are as follows :-

Data in 15 minute repeat cycles.
Lossless compression in the form of Wavelet Transform.
Full spatial resolution in 12 spectral channels
Data available on EUMETCast.

Each repeat cycle nominally consists of 8 segments of image data, except for the HRV channel, which has 24 segments and each segment has 464 lines of image data. A repeat cycle prologue file precedes the delivery of the image segments and a repeat cycle epilogue file follows after the delivery of the segments and contains final quality information for the image. The image segments are numbered and a fixed relationship between the image segment number and the line offset is established. The image segment numbering direction follows the radiometer scan direction.

Now let us look at the file name and types you will see on Channel 2.

As you can see from above (image opposite), for each 15 minute cycle there will be 8 segments for each of the channels 1-11 inclusive and 24 segments for the HRV channel, which in addition to the prologue and epilogue data gives a data total of 114 files for every fifteen minute cycle. A typical file has the following format.

H-000-MSG2__-MSG2_____-
IR_120___-000001___-201005301930-C_

Some features to note.

The 'H' refers to the High rate previously explained.

MSG-2 confirms the satellite of origin.

The IR_120 is the channel reference where 120 represents the wavelength of 12.0 µm which is channel 10.

The 000001 refers to the 1st segment of the cycle.

201005301930 refers to the 19.30 segment on the 30th May 2010.

The prologue and epilogue files take the form :-H-000-MSG2__-MSG2_____-
_____-PRO____-201005301930-_

H-000-MSG2__-MSG2_____-
_____-EPI____-201005301930-_

And finally there is one other file in the channel for service administration :-
H-000-MSG2__-SERVICE___-
ADMIN___-03659_001-201005301944

An example of the quality and resolution of this data is shown below, with an artificially coloured image made up from several HRIT channels. This image is produced from the 3km data and even on this small section of the whole disc a number of interesting features can be seen very clearly. Those include some incredible detail of very active thunderstorms over Africa, evidence of sand blowing over the Atlantic and cloud eddies produced by the Cape Verde Islands. No doubt readers will spot many other interesting features. The HRV channel is even more stunning but it is difficult to do it justice in a magazine image. Add to this the ability to animate images and you just begin to realise the meteorological feast at our fingertips.

EUMETCast Data Channel 5.

This channel carries High Rate SEVIRI data for a Rapid Scan Service (RSS) from the standby satellite.

Meteosat 8 (MSG 1) is the standby satellite to be brought into use if there are any problems with the Primary Service of Meteosat 9 at 0°. However as that is likely to be very rare EUMETSAT decided to utilise the satellite for a Rapid Scan Service (RSS). It is possible to provide scans shorter than 15 minutes if the whole disc is not scanned.

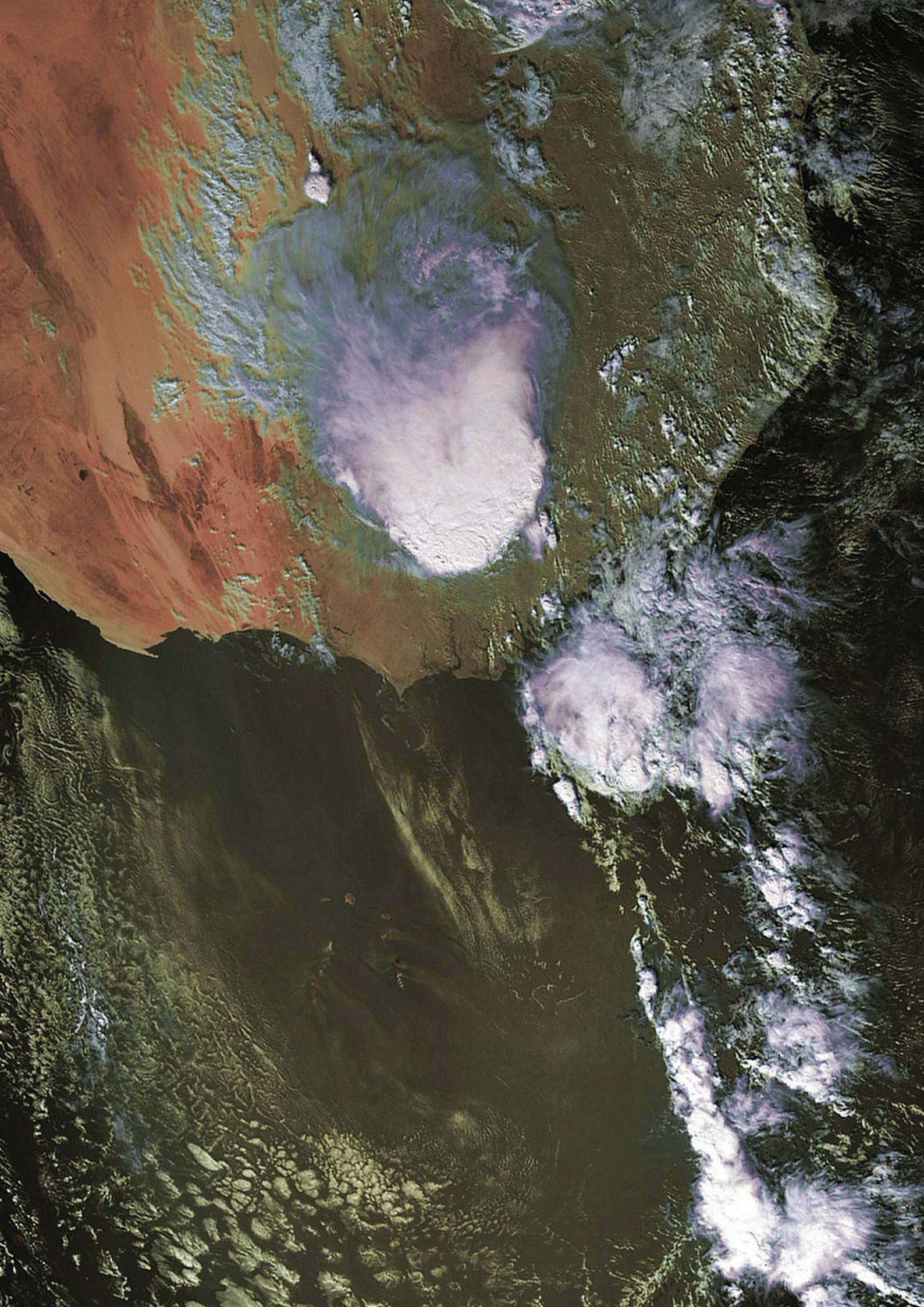
Rapid scan data from the service complements the 15-minute High Resolution Image data generated by the operational Meteosat satellite, Meteosat 9. The scan period is five minutes which is the same as that of European weather radars, making it even more useful in monitoring rapidly developing localised convective weather systems like thunderstorms. The scan covers a latitude range of 15° to 70°. The image data and products are based on the full 12 spectral channels available from MSG.
Meteosat 8 is located at 9.5°E, from where it delivers the RSS and continues to be a backup satellite for Meteosat 9.

Of course with the shorter scan (basically Europe) the number of segments are reduced and for channels 1-11 inclusive only segments 6-8 are sent, and segments 16-24 for the HRV channel. Compare this to the full Meteosat 9 scan discussed above. Although there are fewer files per scan, remember the repeat scans are every 5 minutes something that produces buttery smooth animations.

The file format is very similar to that explained above for the Primary satellite with the obvious changes being MSG1 in lieu of MSG2 and the reference to RSS. A typical file is shown below and as with Channel 2 there is a prologue and epilogue file for each repeat cycle and an ADMIN file. A typical file has the following format with the explanation similar to that above for Channel 2.

H-000-MSG1__-MSG1_RSS____-
VIS006__-000006__-201005312040

H-000-MSG1__-MSG1_RSS____-



_____-PRO____-201005312040

H-000-MSG1__-MSG1_RSS____-
_____-EPI____-201005312040

H-000-MSG1__-SERVICE___-
ADMIN___-03661_001-201005312044

Update to Channel 1 Data.

As I mentioned in my last column the only EARS service still to be completed was the Metop AVHRR FDES. As I draft this column in early June EUMETSAT have just advised that this final EARS service will commence on the 23rd June 2010. For a full explanation of what the FDES service entails and why it was needed please see my column in GEO 26. So to complete the file types for Channel 1, here is a typical file for the Metop FDES service.

AVHR_HRP_00_M02_20100623101100Z_20100623101200Z_N_O_20100623102134Z.bz2

David Taylor's programs (latest releases).

Just a reminder that the list below is for fully tested releases and does not include the latest beta (or alpha) versions currently on test. Those can also be downloaded from David's site.

To learn more about those programs and to download the latest updates please go to :-

http://www.satsignal.eu

ATOVS Reader	v 1.2.0
AVHHR Manager	v 2.0.0
BUFR Viewer	v 1.1.1.4
CMA viewer	v 1.2.0
DWDSAT HRPT Viewer	v 1.2.2
GeoSatSignal	v 7.1.4
GRIB Viewer	v 2.3.8
GroundMap	v 2.1.4
HDF Viewer	v 1.4.4
HRPT Reader	v 2.9.6
Kepler Manager	v 1.3.2
MapToGeo	v 1.1.6
Metop Manager	v 1.4.4
MSG Animator	v 2.5.32
MSG Data Manager	v 2.5.38
PassControl	v 3.2.4
Satsignal	v 5.2.2
Sea-Ice & Viewer	v 1.4.2
Wxtrack	v 3.8.8
MODIS L1 & Fire Viewer	v 1.0.2

Withdrawal of NOAA-17 data from EARS AVHRR

The operational EARS-AVHRR service covers the provision of AVHRR data from the primary Morning Orbit satellite and the primary Afternoon Orbit satellite. For a period of time EARS-AVHRR data have been provided from two satellites in the Morning Orbit, namely NOAA-17 and Metop-A. The main justification for this has been the problems relating to the Metop-A HRPT direct read-out capability. However, since the implementation of a partial Metop Direct Read-out scheme, Metop-A instrument readout covering the ascending passes over Europe and the North Atlantic have been incorporated into the EARS-AVHRR service.

Additionally, Metop-A AVHRR extracted from the global Metop-A data using the Fast Dump Extract System (FDES) is being provided as part of the EARS-AVHRR service. The FDES data sets include the full European Region and cover well the periods when no HRPT data are available. AVHRR data originating from the FDES system are already being distributed as part of EARS-AVHRR via EUMETCast. It seamlessly integrates with AVHRR data originating from HRPT and uses identical file naming and formatting.

Consequently Users registered for the EARS-AVHRR service are already receiving AVHRR data from both sources.

At the same time, the quality of the NOAA-17 AVHRR data has now degraded to a level where the operational value of the data is very limited.

It has therefore been decided to discontinue the dissemination of the NOAA-17 data with the EARS-AVHRR service as of 14 September 2010.

With best regards,
Kim-Hui Gaune
User Support Officer
User Service Division

FOR SALE

For sale; R2ZX VHF Receiver, complete with the CD it came with containing the following software: APT Decoder, SATSIGNAL, WXtolmg. The RX has never been used in anger and the software has never been loaded on a PC. Reason for sale,change of plans.

Sensible offers to, Dave Rennolds (G0BXS)

rennolds@tiscali co.uk

Comma cloud or cyclone?

David J Taylor

Noted off the UK on 2010 July 01 was this cloud formation opposite. Is this a comma-cloud, or is it too large for that?

Image derived from NOAA-19, broadcast over EUMETCast, processed in David Taylor's AVHRR Manager and HRPT Reader software. Pass was at 13:15 UTC.

While most of the UK is under some cloud, to the west Ireland is in the clear, as are the Danish mainland and much of southern Sweden and Norway.

To the south, most of the Mediterranean is in the clear, and the classic shape of Italy can be seen at the bottom right of the image.

From ZAMG & KNMI website 'A Comma is a very prominent cloud feature developing and existing in cold air. There are several similar phenomena within cold air: One of them is Enhanced Cumulus cloudiness (see Enhanced Cumulus. Also a ring of vortices, crescent, oval, solid cloudiness, multiple deep or shallow bands, single deep or shallow bands or swirls in cumulus streets can all be found in cold air.

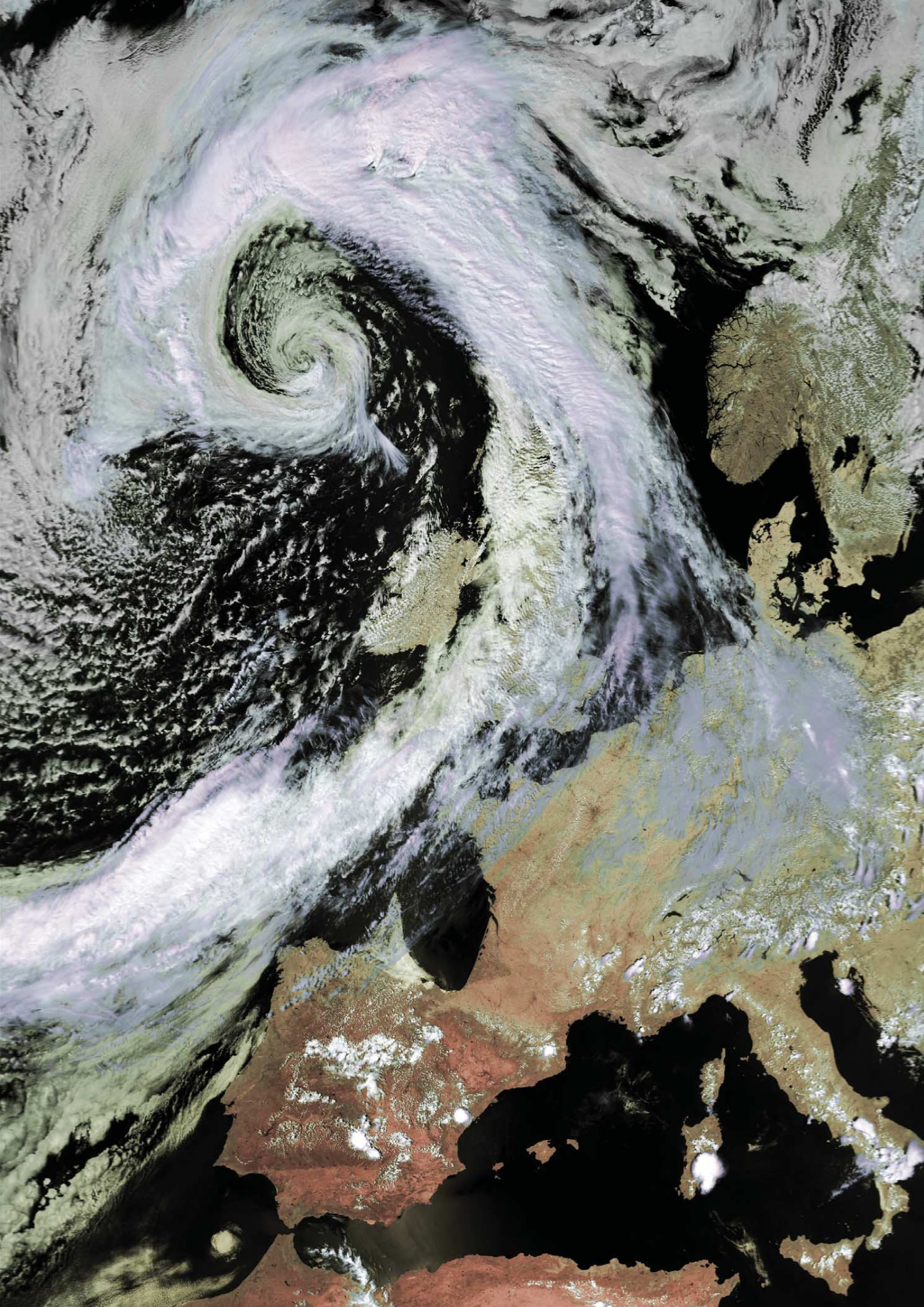
In order to distinguish the Comma from other features in cold air, the Comma cloudiness is defined as a small to meso-scale cloud spiral consisting of white (i.e. cold) cloud cells partly overlaid by cirrus shields.

In most cases the strongest convection can be found in the Comma tail, but sometimes enhanced convection can also be found in the Comma head. In a few cases the Comma head and tail are separated by a narrow cloud-free area or only connected by low clouds (although this may not be apparent during the whole life time of the system). The scale of a Comma lies between 200 and 1000 km, i.e. much smaller than a fully developed depression or a cyclone.

Larger Commas can be a sign of a development process called Cold Air Development(see ColdAir Development), where a Comma increases in size and finally gains some frontal characteristics'.

For a discussion, see:

http://www.zamg.ac.at/docu/Manual/SatManu/main.htm?/docu/Manual/SatManu/CMs/Comma/structure.htm



FEEDBACK

The Column for Readers' Letters and Queries

email: geoeditor@geo-web.org.uk

Answers to Quarterly Question 26

My thanks to all those members who responded to the Quarterly Question in our last issue. The question was prompted by an Envisat image I had received at home which showed a small island in the Mozambique Channel . My special interest was aroused because I was now receiving earth images at home with such a high resolution that this small island could be seen. This was compounded by the fact that I hope to be sailing in that part of the world in January 2011.

The island's name has evolved a little over time but is currently known as Bassas da India although Basse de Judie or Baixo da Judia were also considered correct names. The following members submitted a correct name for the island.

Rob Denton
Storm Dunlop
John Nixon
Elmar Bogels
Ap van Weeren
Ken Eaton
David Pykett
Peter and Francesca Wade
George James
Cliff Goddard
Anders Höök
Fred E, Piering
Ruud Jansen
Nick Tebneff
Mike Bragg

Below are some of the answers I received all of which I found interesting. One member wrote to me in some detail relating his experiences in the merchant navy, regularly sailing in the Mozambique Channel. He said that particular care was taken when sailing anywhere near the location of the island because it did not show up on radar. Only at low tide are some rocks exposed. The island of Europa a little to the south is more conspicuous because of its human occupation which includes a meteorological station and small air strip all of which do show up on a ship 's radar.

Background information about the island of Bassas da India can be found on the Internet. My particular thanks to Ruud Jansen for taking the trouble to track down a detailed image of the island courtesy of Google.

I have not picked a winning entry for the Quarterly Question but will do so in due course: and as promised I will try to buy something suitable from the area as a prize

In the mean time for personal interest I have been tracking down images of Mauritius, Comoros Islands Madagascar and other islands which we hope to visit in the new year.

Hello Francis,

First of all let me say a very big " THANK - YOU" to you and all of the "GEO " team for such an excellent and very interesting and absorbing publication. Also of course to those that make the contributions to the contents. I do pass the publication around with the intention of raising awareness and discussions associated not just with satellites, but also the science, technology advancement and of course impact on " Global Warming".

I always find something of interest to follow up, however I regret to say I have not found time to do much active monitoring of the weather satellites.

Your question raised in the Quarterly 26 took me back to some references and studies I was following up in relation to the "MODIS " satellite and its work and progress. I recall looking at quite a number of excellent photographs published on the topic of the Mozambique Channel and the reefs etc, I was searching for the impact that Global Warming might have on this area.

The island to which you refer, is I believe, " Bassas da India" which lies some 385km west of Madagascar and approx. 110km NW of the Isle Europa.

At low tide it only emerges to a height of 1 -2 metres so I can quite understand the concerns of navigating around this area and location. Thanks to the "Modis " project, so many of the wonderful views of this area and other parts of the world we can now share and use the published photos and other information. Look forward to meeting you and the team at the "Holiday Inn" for the "Amsat -UK" gathering.

Regards
Ken Eaton GW1FKY: AMSAT-UK and AMSAT- NA

Hi Francis,

Again a very good magazine with a lot of information and amazing images.

I think I have the answer on your question about the island name in the south Mozambique Channel. I first took a look at my collection of maps but I couldn't find the island on the maps. Only a few small dots in the water without names. Then I started up Google maps and zoomed in on a south-part of the Mozambique

Channel. Comparing the blue ring image on page 32 and Google maps viewed after zooming and shifting the cursor it was easy (I hope) to find a island with the same dimensions. Surprising for me was that the name of that island was also on the map. I offer you the name of this island and also a screendump of the Google maps page (shown opposite). The name is Bassas da India. On a paper map the name was Europa but I think that is wrong. I hope this is correct and useful information. Two other names for this Island are Basse de Jude and Europ Rocks or only Europ. You can find more information in the Wikipedia pages, pictures and facts.

Best wishes,
Ruud PA0ROJ
http://www.jendela.nl
http://www.kookadri.nl

Dear Francis

I must say, Francis, that I was rather surprised to discover how easy it was to find out details of that island (Bassas da India or Basse de Judie) in the Mozambique Channel.

It made me realise how little I tend to turn to the Internet for information - mainly, perhaps, because I have doubts about the accuracy of many pages. There are certainly some dubious astronomical and meteorological ones ... And some of the good ones tend to move around. The NASA pages are particularly prone to do that, and the other day I had to search hard, and for a long time, to find the latest URL for a particular set of pages that I had given as a reference in one of my books that is just being revised.

At first, incidentally, I thought you were talking about Europa Island, off to the southeast, which is perhaps the more interesting, given that it is inhabited and has a meteorological station.

Yours,
Storm Dunlop

Hi there Francis

I would be quite happy to receive the occasional email on the group's activities. Not that I can do much from over here, but it's nice to keep in the loop.

Now, to question 26. I believe the answer you are after is BASSAS DE INDIA. I can claim no special knowledge except the ability to play on Google Earth and Wikipedia to find this interesting spot. I did enjoy the challenge and like you, had no idea that the peak of a volcano becomes visible at low tides.

Although this is my first letter to the group, I am enjoying the quarterly magazines.

Best wishes and 73's
Nick Tebneff VK5NT

Good morning Francis

I have to work hard to stop myself reading the whole Geo Quarterly on the day it arrives here in Spain! A thoroughly educational and entertaining magazine.

Unfortunately I am unable to receive data directly due to restrictions at this location but my wife and I hope to return to the Scotland as soon as we can find a buyer for our house here. A requirement will be an unrestricted view to the required satellite

I do download data on the internet frequently and use David Taylor's software to display it. My interest is still as keen as ever.

Please include me on your email database.

Kind regards
Ian Walsh
GM4OLH

Dear Francis ,

Thank you for the ' MSG In Orbit In Use' publication from EUMETSAT, it is very interesting, informative and of high quality: also for taking the time to answer my question regarding MSG reception and including the CDs

My Skystar II PCI card is set up to receive the data stream on 9 deg east ENVISAT and 10 deg east EUMETCast the signal and quality levels on both satellites are high. I have also read about the Rob Alblas' software which gives easy control over the Tellique software with the occasional user in mind, ideal for my intended purpose.

I do not have Internet access or an Email address, but I did get onto the web whilst on holiday in Gibraltar, attempting to download the Tellique software: without registering this proved impossible!

GOES-P was launched from Cape Canaveral on a Delta IV on Thursday night 4th March 2010. I followed the proceedings on 10 deg. East W1 10970 Vertical 4167 5/6 , this is the up feed and carries NASA TV at times of activity. The recent STS 130 mission was shown as was the L-Cross mission.

Thank you for your recent letter and the time and effort you all put into GEO: it is appreciated.

Regards

Kevin Hewitt, Kent UK

Dear Francis,

During a recent trip to Gibraltar I visited the Met Office which is situated beside the airport terminal building overlooking the runway.

MSG images are extensively used, a large wall mounted LCD screen continually displays 'Cloud Height' in metres denoted in various colours. Other MSG data is accessed via a PC with dual screens, the mouse cursor jumps between screens. IR images show land and sea temperatures which aids with the prediction of sea mist formation. Visible images show land mass and cloud, sunrise creates shadows around the cloud giving some indication of the depth of the cloud base. Additional data indicates particle size usually rain but more recently ash.

A separate PC displays an animated sequence of visible images taken over a period, showing cloud formation and movement. Another PC displays local wind speed, barometric pressure, temperature and humidity.

I was shown images from mid-April centred on Iceland, the volcanic ash cloud depicted in yellow could be seen to grow steadily in size as the days passed. Other images showed the area of ocean where many of the storms build up before travelling inland to the America's often with devastating effect.

The office has a panel with a number of four inch dials indicating wind speed, a mechanical barometer recording onto a paper chart and a long column barometer. All in contrast to the PC equipment nearby!

A weather balloon, transmitting on 402 MHz is released twice daily, one at mid-day the other at mid-night, more frequently if additional data is required. These balloons eventually drop into the sea or the mountains of Morocco.

Met Office data is provided to GBC, BFBS Television and radio, local newspapers and for the sailing forecast.

This was my first viewing of MSG, the ability to see round the world was impressive, also the wealth of available data.

I recently received my GEO Quarterly No. 26 and was pleasantly surprised to see my name in print. I am pleased to see the return of the NOAA satellite predictions and grateful to Les Hamilton for compiling them, armed with this information I can resume my APT activities.

Thank you for the time and effort you all put into GEO.

Regards
Kevin Hewitt, Kent UK

Windows 7 with TelliCast

Mike Stevens (G4CFZ)

Its been some time since I put finger to keyboard so I thought it was about time I did, but since then a lot has happened in the Satellite world most of which we know as GEO Members, more and more advances have taken place in all walks of life non more so than Computers, and of course the latest whiz is Windows 7, which I am sure we are all still learning how to drive.

I had a complete PC failure back in March/April this year, my Asus computer gave its last breath and failed completely, upon inspection it was found to be beyond economical repair. So we searched on-line as you do these days and found ever more information regarding which is the best. One PC kept cropping up and that was Acer, I have an Acer Laptop, which is now nine years old, but still works fine and is my standby PC to run EUMETCast on (which I have tried and it still works). So having a trusted model as this I decided to go to the nearest supplier and look this machine over. Once seen the decision was made, plus it was at a special introductory offer, so I purchased the Acer Aspire X3300 Desktop PC with Windows 7, it has 3GB Ram and 640GB Hard Drive with accommodation to upgrade to 6GB Ram and a second Hard Drive if required.

So then came the fun part, learning all about Windows 7, and as we know by now it's a totally different animal from XP which we all know and love, so the decision was made to try and make TelliCast and EUMETCast to run on the new PC, I wasn't really sure what I had let my self in for, it was a very sharp learning curve, so here we go.

The first part of the installation is to set up a network, now if you have two PC's with Windows 7 that's easy by going into the Homegroup site and set the system up, but if you are working with one PC running Windows 7 and the other running Windows XP it gets a little more complicated. First go into the Windows 7 PC and open up the < Network and Sharing Centre> then locate and open < Homegroup and Sharing Options> you then open < Change advanced sharing Settings> and then open < Home or Work file>. On each of the sections make sure you turn them all on except the last one under the heading < Homegroup connections>, leave that box as " Use user accounts and passwords to connect to other computers". Also where it says "Use 128-bit encryption, make sure that is ticked, then <Save Changes>.

You should now be able to see the Windows 7 PC on your Windows XP PC, but there is still a move to be made on your XP PC. Open < Control Panel > then < System Properties> locate Computer name, in that same panel you will see the name of the< Workgroup > click on the change icon and set the name to exactly the same as the new PC on windows 7, in my case it was " Workgroup" once done click OK and come out of that section, you should now be able to Network across the two PC's one running XP the other on Windows 7.

A good test is to open Network Places and follow it through to the " WORKGROUP" open on that icon and all the computers in that group will be shown, I have three, two desktops and the Laptop, one other thing do not forget to make sure that any files within Windows 7 you want to share are marked accordingly or you will not have access, for example Program Files, T-Systems etc, especially if you are going to use two computers for EUMETSAT.

So having set up the Network its time to install the EUMETSAT Programmes, I have the latest EUMETCast software Version 5.5, but there is another version 6.0 on its way, (you may have it before you read this article)

But lets work with 5.5, make sure you load the correct EKU Software for your system, its quite easy to pick the correct one, once that is done you can install TelliCast in the usual manner, make sure you put the name and key in correctly, one easy test to ensure the key has entered properly is to click on the RED Tellicast icon and open

"About tc-recv"in the box that appears you will have Four Key lines, the bottom, " Host_key_4 should have a line of " xxxx_xxxx_xxxx_xxxx " that indicates the key has entered correctly. The next item to load are the Drivers for the type of Satellite Receiver you have, mine is the TechniSat Skystar USB, if you have this or the PCI Card you will need TechniSat software version 4.6.0 as that is the only version that will load on Windows 7, and that version will be included on the new EUMETCast Software Version 6.0. So if you need it go to the TechniSat website and locate it and down load to your PC, I did and it loaded without any problems at all, the others on the CD would not load at all. Now from what I am seeing with Windows 7 there are some variations on different PC's, my Daughter has an Acer Aspire, different model from mine but with Windows 7, and she has some very different variations from mine, so this article is how it worked for me and my system, but hopefully it will help you to understand how it works, and that this is a guide rather than absolute.

So we now have all the TelliCast software loaded, we now proceed to set-up the satellite system in the usual way, locating Eurobird 9 and loading all the Data details and PID's, once that is done try the system out to see if it works, if not then we have other things to do.

My advice is to go to David Taylor's excellent website and look at all the details relating to TelliCast and Windows 7, there you can determine what problem you have encountered and how to overcome it.

You may be experiencing a Configuration Error, (key or name not put in correctly), or the TelliCast Icon switches between Active and starting, ie, Yellow or Red, if so there is a line of detail that has to be entered in the Command Prompt, this can also be located on David's website, take care when entering the information as it is case sensitive, I did copy and paste and it went in first time, I then checked to make sure the command was active, and it was confirmed.

If you still have problems look into the Log File on TelliCast and see what it says, one that cropped up with me was, < Coordinator Lost > or < Channel Lost >, if either of those have appeared on the log you will now need to go straight to the Windows 7 Firewall. Locate the Firewall and open it, you need to find the files setting marked < Allow a Program or Feature through Windows Firewall >, open that up and you will have a box on screen with all programmes that are allowed through the Firewall, locate < tc-recv.exc > and <tc-recv > and then make sure you have both boxes ticked in the < Home/Work > column and the < Public column >, as this will stop the system working, once done try the system again, and it should start immediately.

As I have stated before this is how it happened on my set-up and there may be some slight variations on your system due to different satellite receiver of software, but most faults occurring will in some way lead back to the items in this article, I have to say all this worked for me, with lots of advice and help from within the GEO fraternity

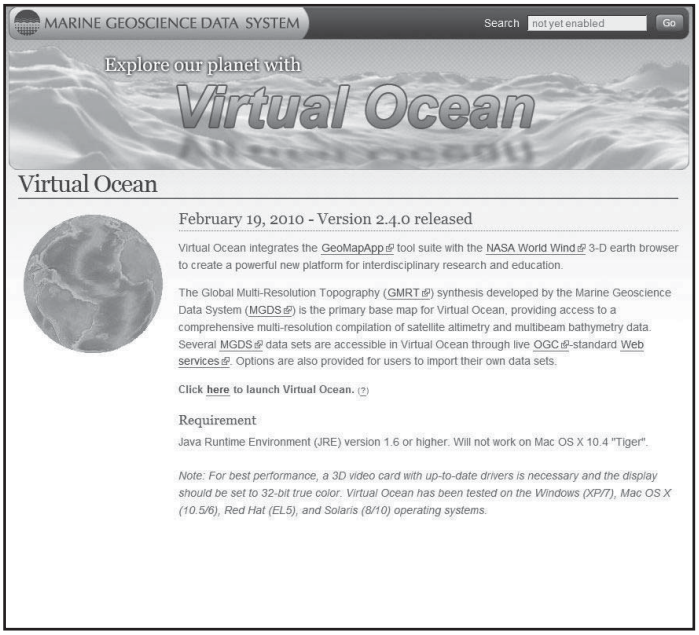
I wish to acknowledge the help and advice given to me throughout this set-up to David Taylor, Ian Deans & Mark Drapes and all the guys on the GEO Yahoo Groups. Also to the staff at EUMETSAT Ops,for the excellent service.

Virtual Ocean and GeoMapApp A vital resource?

David Painter

Many of you reading this have probably installed "Google Earth" and wondered at its ability and facilities to zoom into any earthly facet, and allow you to see images of far off places, or maybe you in your garden from an aerial and satellite montage of images. There is something just as exciting, that does allow you to add further dimensions to the desire to explore further into the Earth by providing many more sources of information that are used daily by the science community globally, to provide the research that we all have an interest in.

These tools are open-source and give the user unrestricted access to many differing locations and types of information, that can be overlaid on satellite images and provide many access portals to a vast array of photographs and other data. These two programs are called "GeoMapApp" and "Virtual Ocean". These two programmes are maintained by the Marine Geo-science Data System (MGDS) at the Lamont-Doherty ***Earth Observatory of Columbia University. (http://www.geomapapp.org/) (http://www.virtualocean.org/)***



Virtual Ocean welcome screen

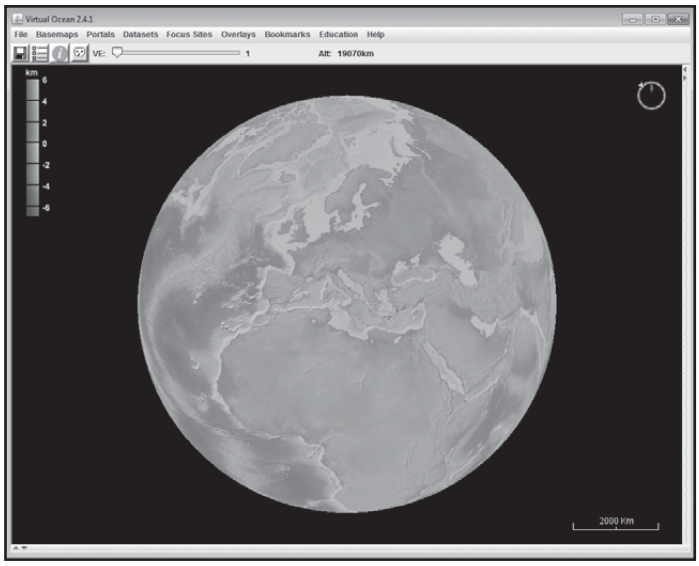
Operation

Both these programmes are "online" portals and require an internet connection to access the vast databases, they use a Java engine to access the resources, as this stops the requirement to download masses of data to the user machine, as such please remember that some of the data you can access can be quite substantial and may cramp you PC or broadband connection if you try too much data at once.

To start visit the website of choice and download the Java runtime programme where it says

"Click here to launch Virtual Ocean ", follow the instructions to either open or save the installer as you require. After the installer runs successfully (if you have an up-to date Java install) you will have to verify the security certificate if your system requests it, after this the application will start and show you the start screen.

The following description is for Virtual Ocean



Virtual Ocean Start page

Structure

The menu structure is "Layer based" in that it allows the user to build up a layer upon layer image, made up from different data sets, as such you need a base layer to start. The Virtual Ocean application is different from GeoMapApp in several ways, but mainly the projection is spherical and allows pan and tilting of the image.

Choose the base map to start with (I suggest for lower bandwidth users) choose the simple topography (GMRT) Base-maps> GlobalMaps>Global Multi-Resolution Topography (GMRT). It is over this initial layer all the other data can be layered, other choices include Landsat Altitude below 500km, NASA Blue marble Imagery or Microsoft virtual Earth. You will see from the expanded menus this is no slouch of a programme when it comes to giving the user choice, so beware you don't add too many layers initially. All of the base maps can have their "opacity" varied so that differing base maps can be graded together to provide a complex base image, that newer research data can be plotted over.

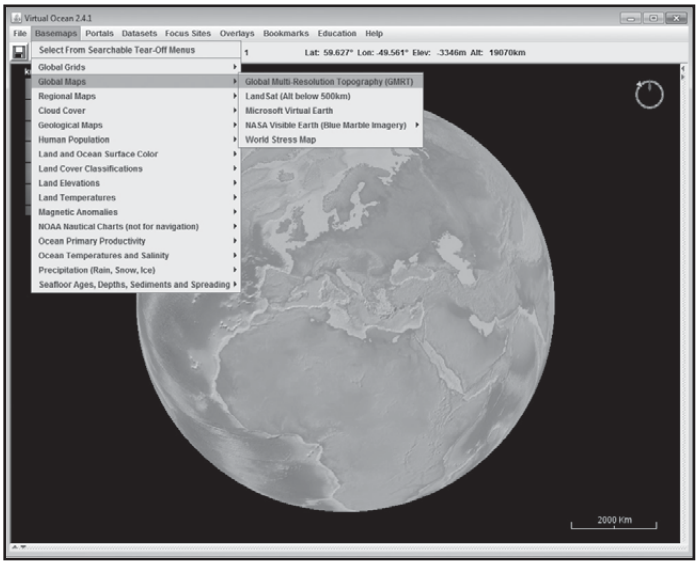
You should now have a populated segmented view of the Earth in topographic relief, you can click left mouse button and hold, (or use the arrow keys) then you can spin the globe anyway you want to view it. If you have a scroll type mouse the wheel will now magnify/reduce the globes size (else use the keyboard + or – to do the same)

Pan and tilt

You can now use the arrow keys to pan and tilt the chosen magnified area whilst holding down the shift key, and add in other resources by adding data from a "portal" or chose a dataset from the relevant menu. The amount of 3D relief can be controlled from the horizontal (vertical elevation) V.E slider at the top of the map window. Space shuttle Altitude data is available to enhance this feature and is usually effective at lower "virtual" altitudes.

Data resolution

Most of the data will give you some idea of the resolution before you select it, and you will have to zoom into the area of interest before the data becomes apparent if there is a lot of data; this is to reduce the amount of information sent to the user PC and help processing.



Virtual Ocean Base Map

Basemaps>Regional>Maps>Antarctica>Satellite Imagery>Modis Mosaic Image of Antarctica

Menu's

When a dataset or other information resource is added, other tear off menu's are added that are interactive, these give the data in tabulated form or provide web-links to the chosen data or load it directly into your browser. The extra tabulated data menus can be controlled and switched off or unloaded by a separate "Layers" tab menu that lists the chosen layers with a Cross-boxed icon that allows you to un-check it or chose the "Close" option within the various menus as selected. I have found that with Windows 7 sometimes the main projection window can become off centred; this I view as another undocumented "feature" of the O.S and be cured by zooming back to global scale from a magnified view. Bookmarks>Zoom to global scale (CTRL-W) (Ubuntu and WinXP are OK)

To switch on or off the chosen layers over the base map either chose the little "tape cassette" looking icon marked "Mask" when the cursor hovers over it (Top Left) if it's a dataset chose "Close" from the newly appeared windows.

For example an archive of ASTER Volcano images can be accessed by choosing:-

"Volcanoes and Seamounts> location and ASTER satellite images of major volcanoes" ;this tabulated view when loaded will bring up a list of all the available volcanic images listed and these can be selected and opened in a browser window by selection of the table view. Some volcano images are single thumbnail images; however some web-links take you to a large archive full of different images of the same location. Some images can be downloaded in higher resolution (VNIR and Infra-red). There are digital elevation models of some sites, but most of the data seems to be around 2005. There are shuttle and other astronautical photographs as well. The same applies should you want to delve into the oceanic depths and view the Alvin or Jason Oceanic trench photographs taken at the crushing depths of the worlds oceans. The top image (opposite page) shows the basic topography base-map (lower) plus an enhanced map view of the North East Atlantic, over layered with a dataset of Earthquake locations coloured by magnitude (1973-2009) with added 3D projection, tilted to provide the desired perspective.

Some data may have several 1000's of points or plots or images and must be allowed time to load, and some data will only be visible above or below a certain global magnification percentage. Some layers like the Terra Modis True colour layer can take some time to load properly, so be patient there is a lot of data. (not full resolution). Also when combining layers remember there are several high resolution data sources streaming down your internet connection.

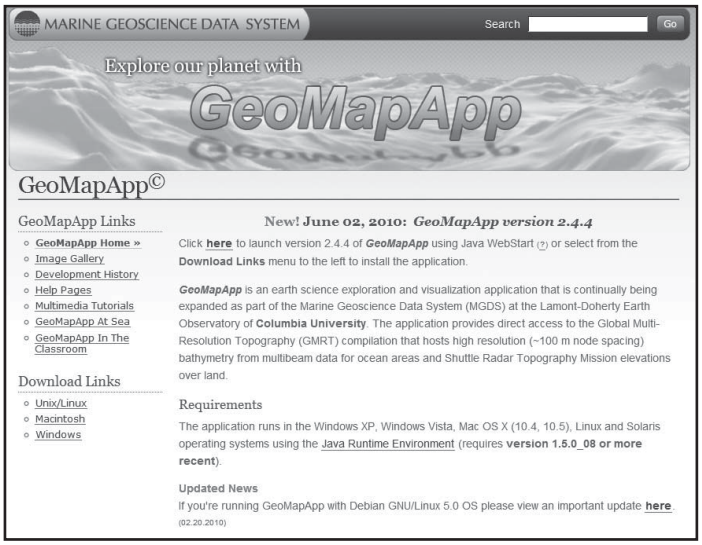
Data

This application appears to be run in real-time aboard many research vessels so the GPS data and track information is available to view to co-ordinate the observations of temperature, depth or other; this can be quite amusing when you see some of the ships tracks between locations as it appears as a meandering snail across the globe as some course correction was applied, or some storm avoided. Some data has the facility to show the coverage as a layer and this can be selected too, this can show you where the most concentrations of data are recorded, for example the Azores as it is a research stop-over for the mid Atlantic ridge observation campaigns

You can enable place names, geographical boundaries, and some NOAA nautical charts; Earthquake data, and other varied sources can be added from many other academic portals if you know or have access to them. Much more layers can be added from the overlays tab, and other data like NOAA AVHRR SST and salinity base-maps from the base-map tab. Interestingly there is an overlay of the Mexican Gulf deep water oil exploration drilling sites, and this has the MC252 Deep water Horizon Drill site, the source of the massive oil spill located on it.(recent) There may be other data for this event but I have not yet found it. Some of the data may not be the latest information, but that is just a matter of knowing where to get the latest data sources and pointing this programme to it.

Tutorials

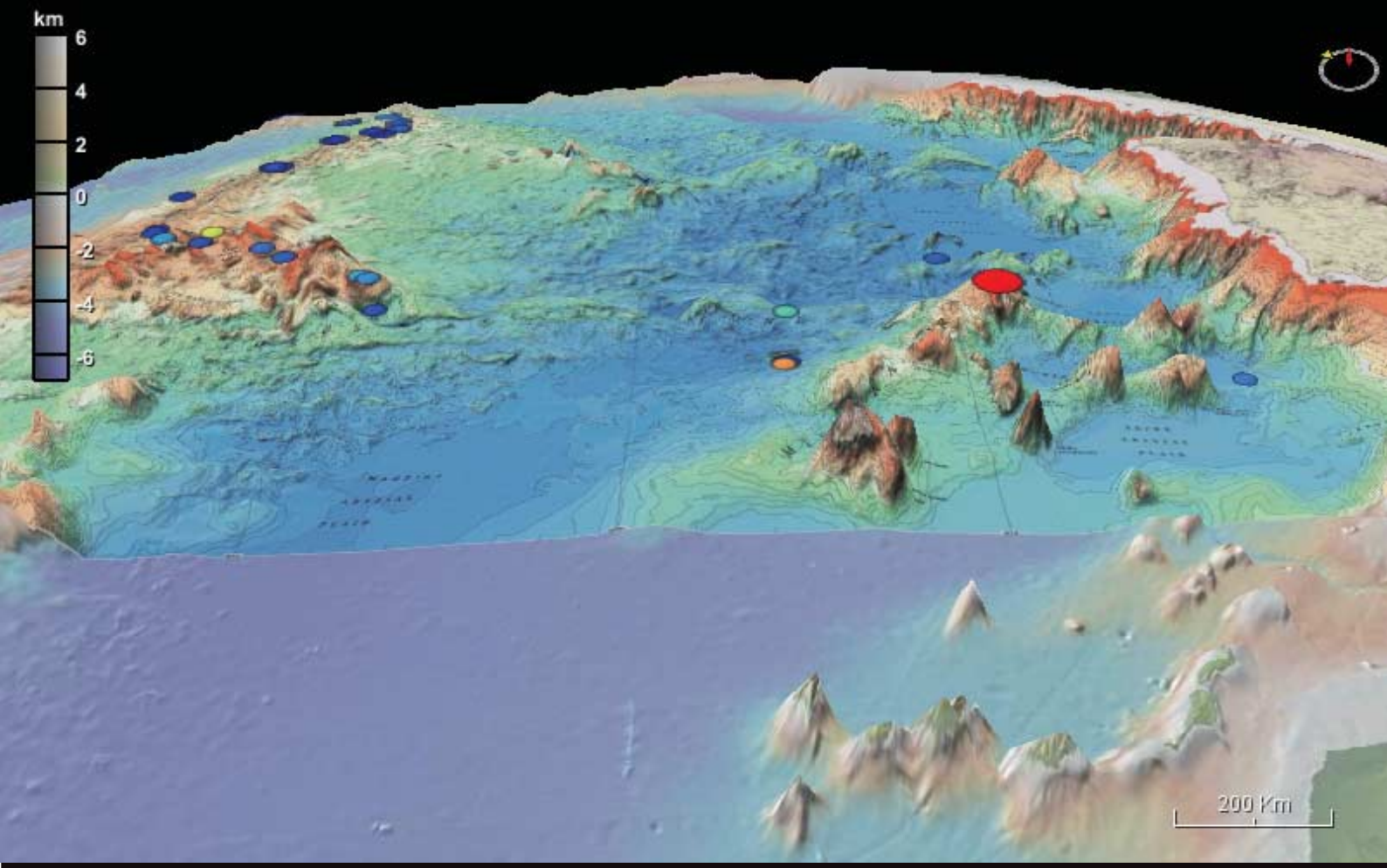
There are many tutorials for using this program under Education>Tutorials



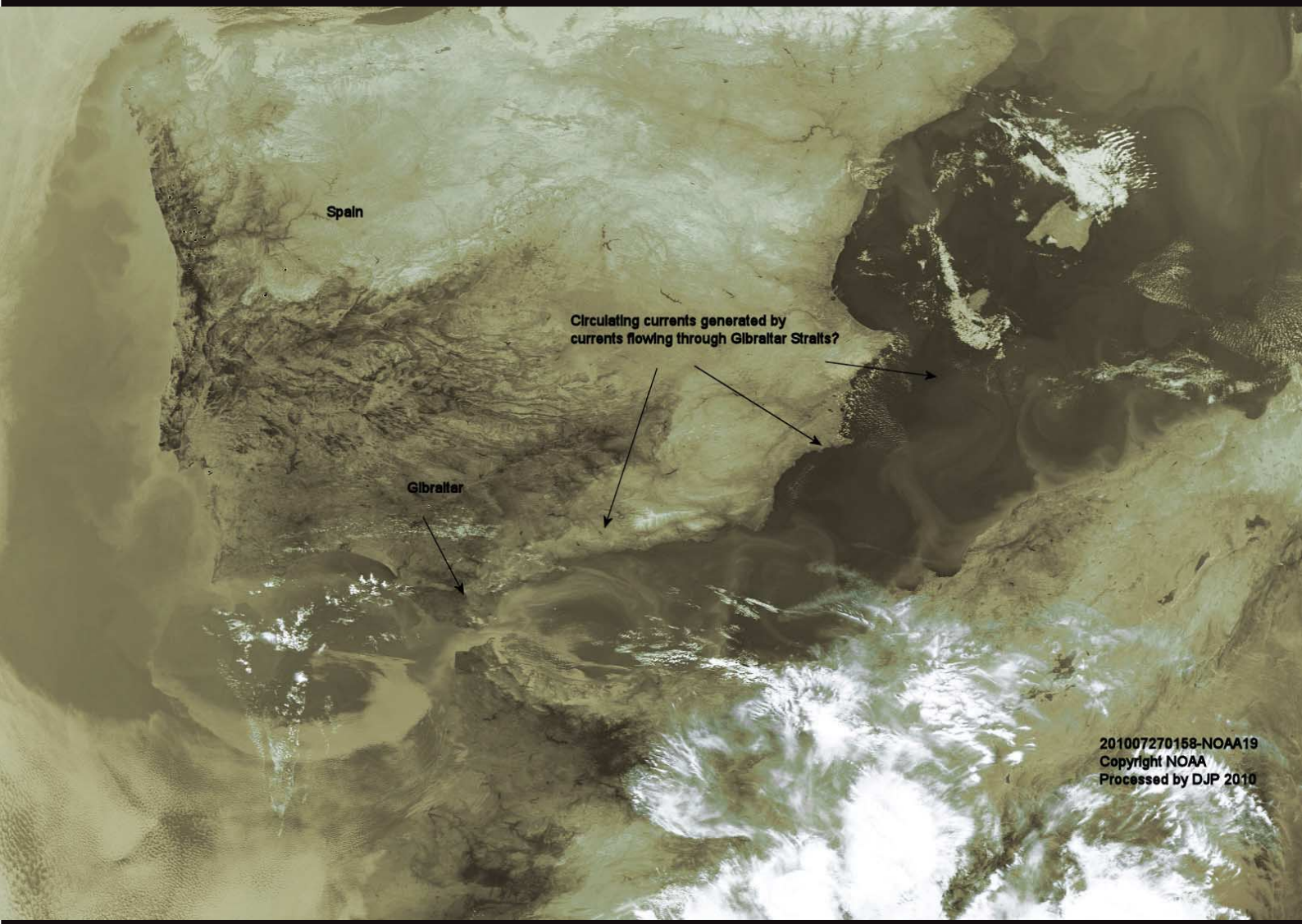
GeoMapApp welcome screen

Overall

If you want data or just to examine the available scientific data on a subject, then this software is a valuable tool; if you just want images then Microsoft virtual Earth or Google is for you; this certainly won't show your house or garden, or even where to find a restaurant. However it can show you almost instantly anywhere on the surface of the globe and show you some very interesting websites and images not normally in the public gaze; as well as unlock some data you may have not known how to get at or know existed. This is in all respects an excellent research tool and I thoroughly recommend it and it can always be used to help illustrate articles for the GEO Quarterly!



Enhanced map view of the North East Atlantic, over layered with a bathemetric contour map, Earthquake data and added 3D projection ©Virtual Ocean



Circulating currents generated by water flow through Strait of Gibraltar, night-time Infra-red