

Watching the weather around the world

These days, automatic weather stations, satellite links and the internet can bring the weather into the classroom, making it even easier to make detailed observations of local weather and relate them to current global weather patterns. **Sylvia Knight** reports on how MetLinkInternational is assisting with this.

MetLinkInternational is the Royal Meteorological Society's flagship weather observation project. Now in its 12th year, it has encouraged hundreds of schools and individuals around the world (Figure 1) – the database of weather reports includes observations submitted from over 50 countries, with a substantial number coming from the UK – to make

weather observations and use data submitted by other schools in lessons and projects. Several MetLink schools have used the project to make links with other schools around the world.

The data-base is available all year for data entry and retrieval. In addition, the project website hosts a wealth of teaching materials for all ages, including exercises in explaining weather conditions, weather systems, climatic zones and more, using the observations in the data-base and other resources. In addition, the project website hosts a wealth of teaching materials for all ages, including exercises in explaining weather conditions, weather systems, climatic zones and more, using the observations database and other resources.

The intention of MetLink-International is that participating students will:

- Use the internet to enhance weather studies

- Observe and record weather data daily over a period of two weeks
- Use the internet to exchange the data with others
- Develop weather projects, plot graphs and compare results with others
- Write articles about weather events and maybe even present weather reports to their classes.

As a result, students' ability to collect and record data should improve, as well as their awareness of meteorology in general, their appreciation of differences in weather from place to place and time to time and the reasons for those differences (Figure 2).

The recommended equipment for participation is basic – a maximum and minimum thermometer, rain gauge (suggestions for making one are provided), a cloud chart showing major cloud types and an internet connection. The project website also contains helpful hints on setting up equipment and getting started.

In past years, the most intensive activity has focused on a two week 'active phase' – in 2008, this was in March. In this period, daily summaries produced by the Royal Meteorological Society team highlight significant weather observations entered in the data base, published weather charts, satellite images and weather web-cams. Over the next 12 months, MetLink will see considerable development, linking it directly in to the UK national curriculum in geography, maths and science. In particular, MetLink will be used to investigate the urban heat islands of towns and cities around the UK. Registration of new participants is always welcomed.



Figure 1: Global participation in the project.



Figure 2: American International School, Johannesburg, South Africa, regular participants since 2004.

Sample comments

The following comments were submitted on one day in January during the MetLinkInternational 2007 active phase:

- Royal Navy ice-breaker and patrol vessel *HMS Endurance* (Figure 3) on the Southern Ocean: 'Sea state 1 with numerous icebergs with fog at times reducing visibility to 1000m with the lowest cloud base at 100ft'
- Radley College, Oxfordshire: 'dull, mild, calm and overcast. Anti-cyclonic gloom!'
- Carl Ben Eielson Middle School, North Dakota: '-24°C. A cold dry Arctic air mass has settled in over our area.'
- Micklefield School, South Africa: 'The maximum temperature has gone up to 33°C. There is a south easterly wind which seems to be picking up. In Cape Town, we call the south easterly wind the 'Cape Doctor' because it blows all the pollution away and keeps our Table Mountain looking clear and beautiful.'

Extremes

During MetLink 1999, Finland experienced its lowest ever recorded temperatures, thanks to cold winds from Siberia. One day, the temperature inside Vörå-Oravais-Maxmo Högsta-dieskola in northern Finland was 13.5°C (the school was shut!), and the air temperatures submitted by Eno school hovered around -24°C. Television reporters demonstrated how cold it was by throwing cups of warm water into the air, where it became a cloud of ice crystals before reaching the ground. Participants reported that car tyres became harder than usual and, because the tyre pressure fell as well, the part in contact with the ground became flattened. This caused cars to 'kangaroo jump' until the tyres warmed and became circular again.

The Escola Co-operativa El Puig near Barcelona recorded a maximum temperature of 45°C in June 2007. This occurred during the widespread heat wave in Southern Europe, linked to an area of high pressure over Italy, Greece and Turkey. At the same time, the UK was being battered by successive low pressure systems, bringing rain and flooding. A participant in Birmingham recorded 91.5mm of rain on the 14/15 June 2007 – 154% of the expected rainfall for June.

The British International School in Lagos, Nigeria, recorded 223.3mm on 20 April 2005 after a heavy and persistent thunderstorm in the night. This occurred right at the start of the rainy season.

Comments from teachers using MetLinkInternational:

Micklefield School, Cape Town

'The wonderful thing about your weather project is that it:

- is on the internet and interactive
- is global
- offers facts and figures
- saves the teacher time
- gives pictures and updates
- is quick and ready to use
- is child friendly
- is teacher friendly
- shows webcams and photos
- creates graphs
- allows comparison with other schools
- is easy to upload information
- needs only basic equipment.

I don't think we would have been doing your project since 2000 if it weren't made so easy for the teacher to just pick up and join in. We love putting the girls into their groups (3-4 girls in a group) and with very little equipment, we manage to do the project: we only have a min/max thermometer, a battered old rain gauge and a hand-made wind vane (which is held together with blue-tack!) We then use your cloud and wind chart that we have printed off your website to work out the rest! What fun – I think that that is the charm of your project – the school can make it as simple or as complex as its time, knowledge and equipment allows. Although we have very little equipment, we have seen girls become aware and more knowledgeable about the weather for two weeks (and hopefully beyond!).

Radley College, UK

'During the active phase of MetLink our students engage in the project in a variety of ways. The year 10 students study weather and climate as part of the GCSE specification. Students use our own school weather station to record the weather each morning at 8am. Observations are made for temperature (maximum and minimum), rainfall, pressure, wind speed and direction, % relative humidity, cloud type, cloud cover and current weather conditions.



Figure 3: HMS Endurance in the Antarctic.

The observations are then entered into the MetLink weather database and there is much excitement to see whether we feature in the daily top 10 coldest, hottest, wettest or windiest locations.

All of the students get an opportunity to use the MetLink weather database to investigate first-hand the differences in current weather in places around the world and to understand the influence of latitude, altitude, continentality, time of day and season. They can use data to plot their own maps to show such things as the variations in temperature at a variety of scales e.g. in the UK, Europe or worldwide.

MetLink also provides downloadable blank maps with pre-prepared weather symbols so that students can plot their own synoptic charts based on the MetLink data and compare these with professional weather charts in the daily newspapers or from the Met Office. There is a full range of other classroom activities and worksheets.

The daily summaries and 'MetFlash!' weather news items appear as a live RSS feed on the school's geography intranet home page. Students can follow the weather news as it constantly updates throughout the day. It is always interesting to read the personal accounts of blizzards, heat-waves or floods experienced by other MetLink participants and to view their accompanying photos'.

Lakshmi Ashram School, India

'The school weather station has been active for over 20 years now. During the active period of MetLink one or two classes always participate in taking the daily readings (Figure 4) and in sending them over the internet. This allows them direct awareness of the daily variations in temperature and relative humidity – usually not so marked here unless we experience a westerly disturbance – plus having hands-on experience at the computer. Then they present their readings to all the students and teachers at afternoon assembly, and we look at the day's extremes of temperature and rainfall with the help of the world map, and seek to understand the differences – e.g. lowest temperatures in the northern hemisphere in winter, highest in the tropics or southern hemisphere.

Lakshmi Ashram School, Northern India, is situated at a height of about 1800m in the foothills of the Himalaya. It is on the south facing side of a pine-forested ridge, while to the north are the highest peaks of the Indian Himalaya, culminating in Nanda Devi. The school enters weather observations into the MetLink database throughout the year'. ■



Figure 4: Taking daily readings at Lakshmi Ashram School, India.

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