meteoblue
Weather ☼ close to you
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PUBLIC
VERSION 1.02

meteoblue AG
Clarastr.2
CH-4058 Basel
29.06.2011 / KGG

meteoblue AIR cross-section

1   Content

meteoblue AIR cross-sections show a vertical cut through the atmosphere conditions over a longer distance, for a defined set of parameters. Standard cross sections are available for temperature /wind and clouds and have 2 directions: **North-South** and **West-East**. The selected point is in the center, where both directions cross. The size of the cross-sections can be set using the distance from the center (in "degree"). Thereby, you can explore hundreds of kilometers of air - with just 2 clicks.

Cross-sections can be used for weather forecasting, travel and flight planning, surface monitoring and many other special uses .

2   Display

2.1   Chart

The cross-section displays a cut of the atmosphere, which center is the place (name or coordinate) selected in **p☼int** and reaches North-South and East-West over the selected distance for the selected time (hour).

The graph title (see Figure 1) shows the used parameters, date and time (in UTC), and the model domain name (e.g. NMM-3). The resulting cross-section is shown on 2 diagrams, with the selected position marked by a vertical line in the middle of each diagram. The X-axis of the graph shows the coordinates of the covered distance range, and the y-axis the altitude as pressure levels (hPa, right side) and approximate kilometers above sea level (km asl, left side). The Y-axis also show the parameter scales for each diagram.

2.2   Use instructions

Select a place in p☼int and then > AIR > cross-section. You have the following options:

- **Cross section clouds** : display of precipitation amount and cloud density up to 200 hPa.
- **Cross section temp**: display of temperature and wind up to 500 hPa.

A first chart will appear with the standard settings for Level=Surface, Time = 6, Distance = 5°. Adjust the **Starting Time** and/or **Distance** to your preferences, and click on "generate".

meteoblue AIR cross-sections may take some seconds to transmit, due to the large data amount required. If the image does not appear after 5 seconds, refresh the screen to repeat the query.

For certain places or for a longer Distance (more than 5 degrees), the cross-section may reach the edge of the selected weather model (NMM) domain (see 3.3). If the vertical line is not in the center, the cross section range is limited by data availability on the shorter side of the diagram.

The AIR cross-section does not display differences of day and night time. Local sunrise and sunset times can be found in the pict☼cast diagrams. meteoblue mete☼maps complement the local information by giving regional overviews. For longer term planning, use the meteogram 6-14 day. More information can be found on www.meteoblue.com (HELP >AIR ACross-section).

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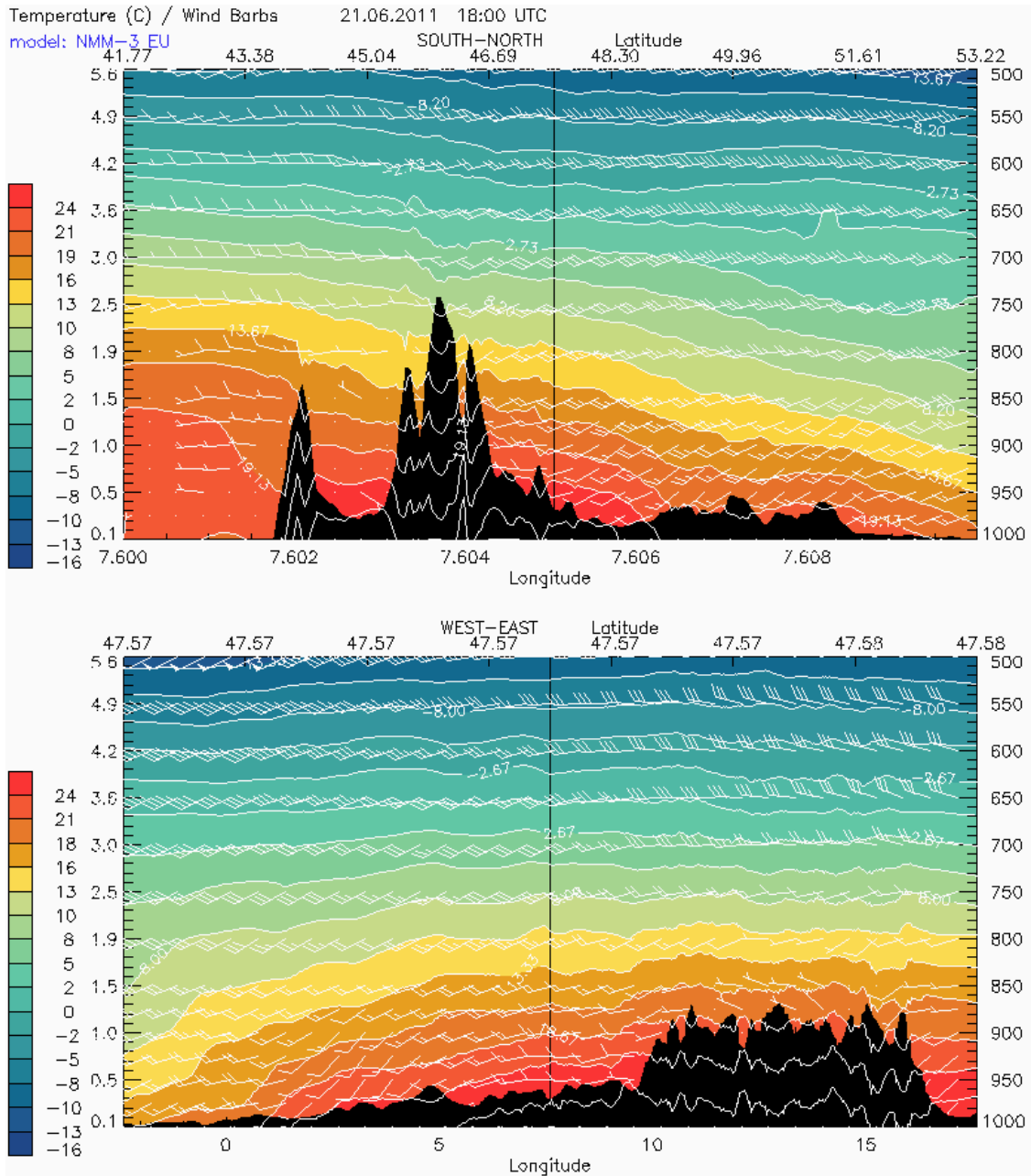Clarastr.2
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Figure 1. Cross-section Temperature/Wind for Basel, Switzerland, at 47.57 N 7.60 E 263 m asl. Mountain ranges: South of center = Swiss Alps, East of center = Bavarian/Austrian pre-Alps.

The Temperature/Wind cross section shows the temperature layers and wind direction and speed up to 500 hPa (approximately 5.6 km). The temperature scale (in °C) is shown on the left side of the diagram. The wind barbs (symbols) follow the WMO convention: The feathers (\\) are placed on the direction FROM which the wind blows. The number and size of the feathers represents the speed (see 3.2.).

The cross-section Clouds shows the cloud density in 0 to 11 km altitude, on a 0 to 100% density scale, where hundred means that the entire atmosphere level is filled by a cloud (see Figure 2). The colour scale is blue-yellow-purple, to allow differentiating the clouds both day and night. The amount of precipitation is indicated (in mm) with white bars in a height according to the scale on the right-hand lower side.
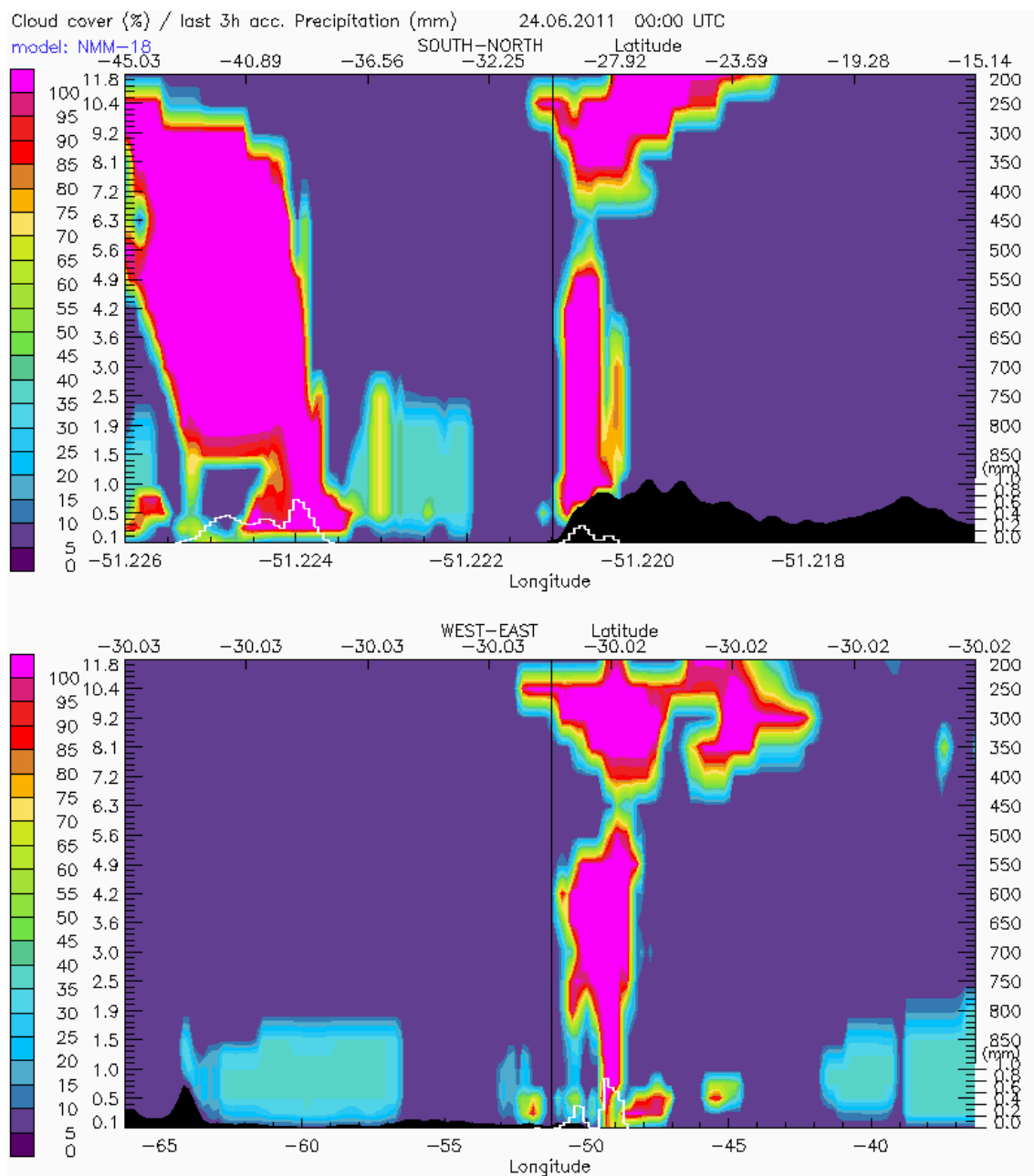
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Figure 2. Cross-section Clouds/Precipitation for Porto Alegre, Brazil, 30.03S 51.23W 10 m asl. Mountain ranges: North of center = Santa Catarina (BR), East of center = Pampa (AR).

3 Units & conversions

3.1 Pressure levels & altitude

Pressure is provided in hPa (hectoPascal). The pressure levels are standard atmosphere layers, valid for the model "grid cells" (smallest area unit for calculation) from which the cross-section is extracted: this may be different from the elevation of the selected location. Altitude is given in pressure and kilometers above sea level (km asl). More precise altitudes (in km) can be calculated from the chart for transformation of air pressure into altitude (Fig. 3).

3.2 Wind speed and direction

An overview of wind symbols is shown on http://www.meteoblue.com/en_GB/content/275 .
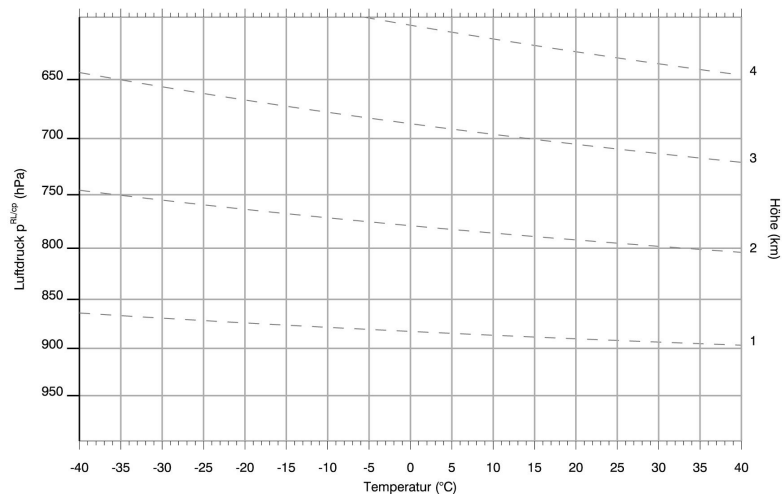
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Figure 3. Relationship between air pressure and altitude as influenced by temperature.

3.3   Forecast area and radius

meteoblue crosssection are available for all areas with meteoblue high resolution models (NMM). These are Europe, Sub-Saharan Africa, North and South America, and Southeast Asia.

The model (NMM) domain (area) for which the weather is calculated defines how a cross section will be displayed. At the edge of the domain, the cross-section display will stop. The model "grid cell" size defines the resolution of the data used for cross-section calculation: the grid cell 4 is 1/3 the rainSP☼T radius of the selected location (see Pict☼cast) and varies between forecast domains (see rainSP☼T in the location pict☼cast). The precision of the information increases with resolution, especially at lower altitude levels.

3.4   Time

All time stamps used are UTC (Universal Coordinated Time), corresponding to time at the 0° Meridian. Time for places with Eastern longitude has to be added (+ 1 to +12 hours) and time for places with Western longitude subtracted (- 1 to -12 hours). Local time zone information is available in the Standard meteogram or Pictocast (which contain sunrise and sunset time), from local airports or http://www.timeanddate.com//worldclock/. In AIR cross-sections produced for Sydney (Australia) and San Francisco (US), noontime will be displayed at 2 and 20 UTC, respectively. Summer time switches are not considered in the display. The day- and night times are not shown, to allow good display of several parameters in one chart.

3.5   Language

Graphics are displayed in English, since cross-sections are mostly used by for air traffic.

4   Recommendations for use

meteoblue AIR cross-sections can be used for many purposes:

 ➢ For general weather forecasting
 ➢ For airplane and glider flight planning, to anticipate altitude visibility and (head)winds;
 ➢ For monitoring weather fronts;
 ➢ For air inversion monitoring;
 ➢ For anticipating the freezing level;
 ➢ For understand air currents at higher levels for (local) weather forecasting;
 ➢ and for your very special purpose: write to info@meteoblue.com with your suggestions!

meteoblue cross-sections lets you cross the AIR above you.