High Resolution Precipitation Index Factsheet

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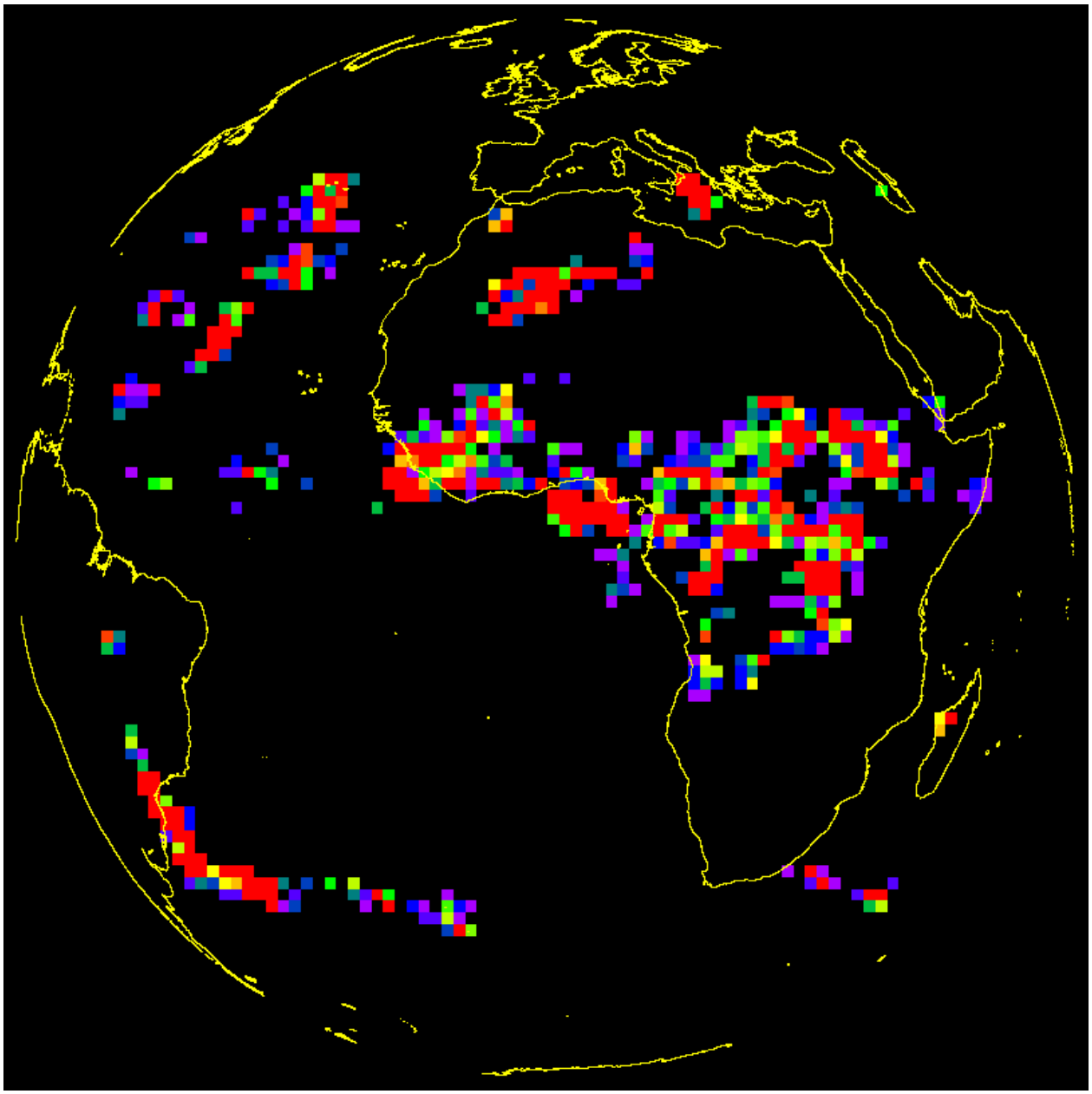
The High Resolution Precipitation Index (HPI) generation is based on the relationship between the channel top-of-atmosphere (TOA) radiance equivalent black body temperature (EBBT) of clouds and convective rainfall. The idea of this relationship is that clouds with cold tops are convective rain-bearing clouds. The scheme is a cloud indexing method based on the pixel values of an IR channel. The default HPI processing area covers a box bounded by ±40° of latitude and ±50° of longitude from the SSP. It is segmented into equal-angle latitude/longitude areas where the default size of the processing segments is 1° x 1° lat/lon.



Example HPI at 23:45 UTC on 4 October 2005

Precipitation index values for the various HPI processing segments are currently derived from satellite infrared image data accumulated hourly. For each run of the HPI product generation task an HPI data set is generated. All HPI data sets for one day are put into the final HPI product, providing a temporal and spatial distribution of the precipitation indices for the day. The precipitation indices are based on the black body temperatures being equivalent to the pixel counts of a particular IR channel (nominally the IR10.8 μm channel). In addition to the precipitation indices, the final HPI product contains also per processing segment the EBBT mean for each individual run (intermediate product) and the variance of the EBBT means of the individual runs of the day. There are 24 EBBT histogram classes. The cold EBBT classes are indicative of the likelihood of precipitation.

The example picture of a final HPI product shows for each 1° x 1° box the percentage of pixels within a selected temperature class. Blue/purple represents approximately 0%, green 50% and red 100%. Brighter colours indicate a greater fraction of cold pixels with potential precipitation.

The final HPI product is sent to the EUMETSAT U-MARF once a day and stored. EUMETSAT has to provide the precipitation index data set to the Global Precipitation Climatology Project (GPCP).