

Global Atmospheric Profiles from Reanalysis Information (GAPRI): a new database for earth surface temperature retrieval

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Resumen

This paper presents the Global Atmospheric Profiles derived from Reanalysis Information (GAPRI) database, which was designed for earth surface temperature retrieval. GAPRI is a comprehensive compilation of selected atmospheric vertical profiles at global scale which can be used for radiative transfer simulation in order to obtain generalized algorithms to estimate land surface temperature (LST). GAPRI includes information on geopotential height, atmospheric pressure, air temperature, and relative humidity derived from the European Centre for Medium-Range Weather Forecasts Re-Analysis data from year 2011. The atmospheric profiles are structured for 29 vertical levels and extracted from a global spatial grid of about 0.75 degrees x 0.75 degrees latitude-longitude with a temporal resolution of 6hours. The selection method is based in the extraction of clear sky profiles over different atmospheric weather conditions such as tropical, mid-latitude summer, subarctic, and arctic, while also considering sea and land areas and day- and night-time conditions. The GAPRI database was validated by comparing land and sea surface temperature values derived from it to those obtained using other existing atmospheric profile databases and in situ measurements. Moreover, GAPRI was also compared to previous radiosonde atmospheric profiles using simulated split-window algorithms. Results show good agreement between GAPRI and previous atmospheric databases, thus demonstrating the potential of GAPRI for studies related to forward simulations in the thermal infrared range. GAPRI is a freely available database that can be modified according to the user's needs and local atmospheric conditions.

Palabras clave

KeyWords Plus: [Split-Window algorithm](#); [Era-Interim](#); [Radiosounding database](#); [Data assimilation](#); [Modis](#); [Merra](#)

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