Bouguer anomaly values and assuming a lateral extent of at least 50 km for cortical bodies and a variable lateral extent for sedimentary bodies such as semigraben (i.e., asymmetric, fault-bounded, extensional basin).

Thirteen different materials have been considered on the basis of refraction data from *Sibuet et al*. [1995]. Density-seismic velocity correspondence, shown in Figure 2, is derived from empirical relations [*Ludwig et al*., 1970].

To constrain some cortical features, data were used from the seismic refraction profile interpretation by *Sibuet et al*. [1995], as well as from the seismic reflection profiles from *Murillas et al*. [1990]. The model has first been adjusted in zones with major seismic control and relatively few uncertainties (the ocean-continent transition zone and Galicia Interior Basin), and then extended toward those areas where seismic data are scarce.

The gravity profile shows a discontinuous increase from values close to +200 mGal eastward to even more than +350 mGal in the west (Figure 2). A relative maximum is related to the extremely stretched continental crust of the Galicia Interior Basin, whereas a relative minimum is identified over the Galicia Bank where the continental crust is thicker.

The profile presents a zone of strong gradient from kilometer +120 to +160 that has been related to the transition between continental and oceanic crust. Bouguer anomaly values become nearly plane toward the west following a relatively constant guideline over +340 mGal, being indicative values of "normal" oceanic crust as suggested by the gravity models.

Bouguer anomaly values become nearly plane toward the west following a relatively constant guideline over +340 mGal, being indicative values of "normal" oceanic crust as suggested by the gravity models. To go beyond Bouguer anomaly values of +340 mGal with a constant guideline, can be established as a criterion to define the "normal" oceanic crust. Carrying out new models, similar to the one presented here, it is possible to delimit the ocean-continent boundary as preliminarily proposed in Figure 1. This location of the boundary from gravity data is a few tens of kilometers eastward from that previously established on the peridotite ridge according to a sedimentary criterion [*Boillot et al*., 1989].

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Author Information

A. Carbó, A. Muñoz, M. Druet, P. Llanes, and J. Álvarez, Departamento de Geodinámica, Universidad Complutense de Madrid, Spain

For additional information, contact M. Druet, E-mail: mdruet@geo.ucm.es.

NEWS

New Vegetation Index Data Set Available to Monitor Global Change

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A consistent, 2-decade or longer vegetation record is needed to detect trends in global land cover and climate change. With the longest record starting in 1981, vegetation data from the Advanced Very High Resolution Radiometer (AVHRR) have played a key role in detecting changes in vegetation caused by global temperature increases.

NASA's Global Inventory Modeling and Mapping Studies (GIMMS) group has recently produced a new global vegetation data set at 8-km resolution from 1981 to 2004. Maximizing the length, stability, and quality of the AVHRR data set, the GIMMS Normalized Difference Vegetation Index (NDVI) data will enable new Earth science conclusions and continuous monitoring of vegetation dynamics during the next decade.

Since the first demonstrations of the capability of the AVHRR to measure Earth surface conditions [*Tucker et al*., 1985], there has been intense interest in using the continuous record to monitor Earth surface conditions at a regional to global scale. Spectral vegetation indices are the most widely used of any of the products derived from the AVHRR instruments [*Cracknell*, 2001], a development not anticipated by the designers of the AVHRR instruments.

Using AVHRR data, *Myneni et al*. [1997] showed evidence of a lengthening of the growing season at northern latitudes. Recently, *Nemani et al*. [2003] showed that changes in the climate caused a net primary production increase of 6% in the northern latitudes (3.4 petagrams (Pg) of carbon over 18 years). However, these and other authors have had to resort to ad hoc corrections and to adopt various vicarious calibration strategies in order to use the data. NDVI from the AVHRR record suffers from some significant limitations, including the use of outdated and inadequate calibration, partial atmospheric correction, and small signal-to-noise ratios [*Tucker et al*., 2004].

AVHRR has significantly more problems in correcting for atmospheric effects than the newer sensors (e.g., SeaWIFS: Sea-Viewing Wide Field-of-view Sensor, and MODIS: Moderate-Resolution Imaging Spectroradiometer) designed to measure vegetation dynamics due to wide spectral bands. The AVHRR sensor also has the additional problem of incorporating data from seven different AVHRR instruments on six U.S. National Oceanic and Atmospheric Administration polar orbiting meteorological satellites that suffer from orbital drift [*Cracknell*, 1997; *Kidwell*, 1998, 2000].

The GIMMS data set removes the effects of these issues with a correction using Empirical Mode Decomposition (EMD) designed for non-parametric and non-stationary data [*Pinzon et al*., 2004]. These corrections result in a stable time series appropriate for trend analysis (Figure 1).

The GIMMS data set integrates the most recent AVHRR instruments (NOAA 16 and 17) into the historical continuum of AVHRR data. By intercalibrating these data with NDVI from the SPOT (Systeme Pour l'Observation de la Terre) Vegetation instrument and the MODIS instrument on Terra, the usefulness of the long time series record has been improved.

Benefits of the intercalibration include using longer time series means to calculate anomalies using SPOT Vegetation and MODIS Terra NDVI data quantitatively with respect to a 24-year NDVI record, and having multiple NDVI data sources in case one or more satellites or instruments fail.

The AVHRR NDVI 1981–2004 historical record within the MODIS, SPOT Vegetation, and SeaWIFS NDVI data dynamic range (Figure 2) have been processed. This has been done without resorting to ad hoc, regression, or statistical techniques that reduce the data's independence from other satellites.

The new range enables the many advantages of MODIS data to be used while retaining historical information from areas of interest, albeit at a much reduced spatial resolution. The new data set differs from previous AVHRR data sets only in range and noise level, and should allow an easier transition for users of global coarse-resolution NDVI data to the new generation of sensors. In addition, information from MODIS and other new sensors can be used to better understand the historical dynamics in AVHRR NDVI.

In December 2004, the GIMMS AVHRR NDVI data set becomes available at the University of Maryland's Global Land Cover Facility (http://glcf.umiacs.umd.edu) in the original bimonthly, continental, Albers Equal Area projection, binary files at 8 km, and bimonthly in a global latitude/longitude projection geoTIFF format. In addition, monthly global data at one degree, half degree, and quarter degree latitude-longitude grids are available through the International Satellite Land Surface Climatology Project Initiative II Web site (http://islscp2.sesda.com/ISLSCP2_1/html_pages/data_matrix.html).

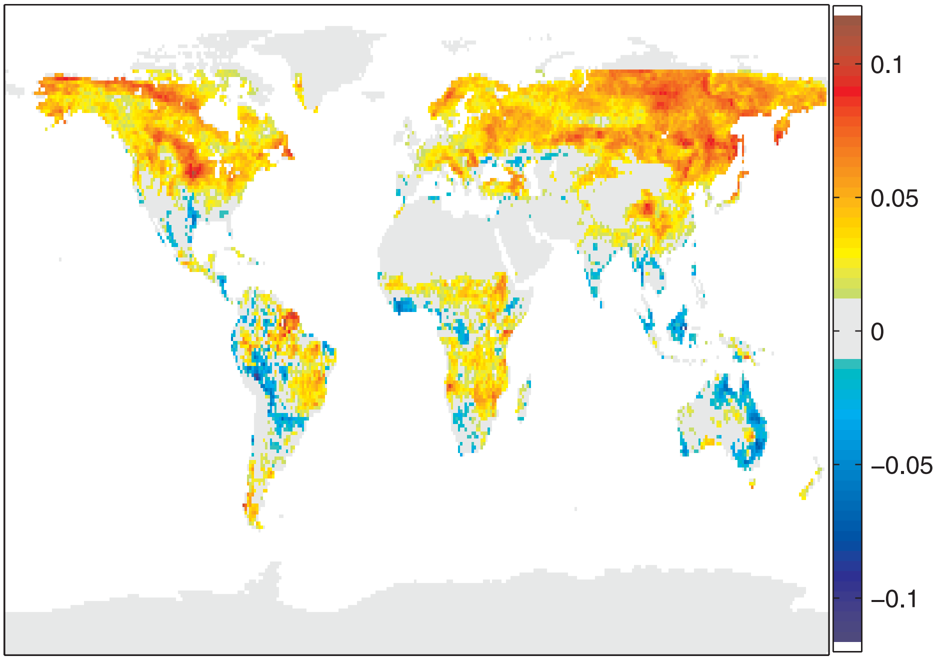

Fig. 1. Spatial distribution of linear trends in GIMMS NDVIg AVHRR data set from 1982 to 2003, calculated with monthly 1° data.

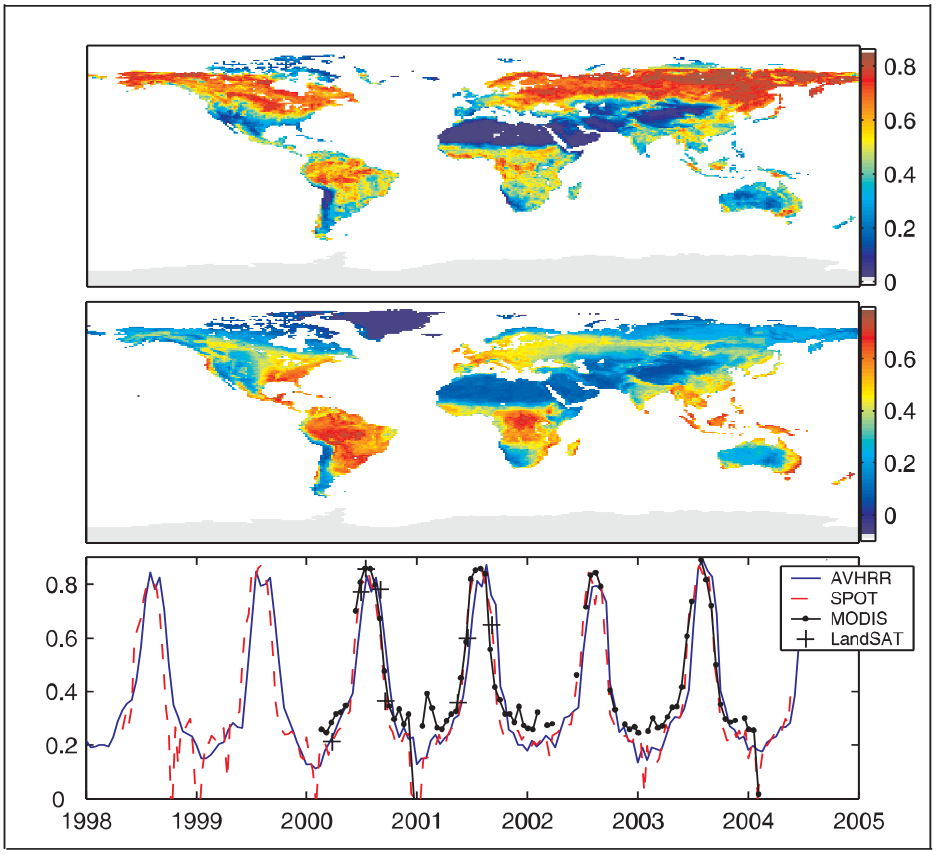

*Fig. 2. (upper) NDVI range calculated by the maximum-minimum, and (middle) the mean NDVI of the GIMMS NDVIg data set, bimonthly composites from 1981 to 2004. (bottom) Time series comparison with a 24 x 24 km box averaged for each time period for data from AVHRR NDVI, SPOT Vegetation, MODIS 500 m data, and LandSAT ETM+ scenes that have been atmospherically corrected [*Morisette et al., *2004].*

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—Molly E. Brown, Jorge E. Pinzon, and Compton J. Tucker, NASA Goddard Space Flight Center, Greenbelt, Md.

For additional information, contact M. E. Brown; E-mail: molly.brown@gsfc.nasa.gov.