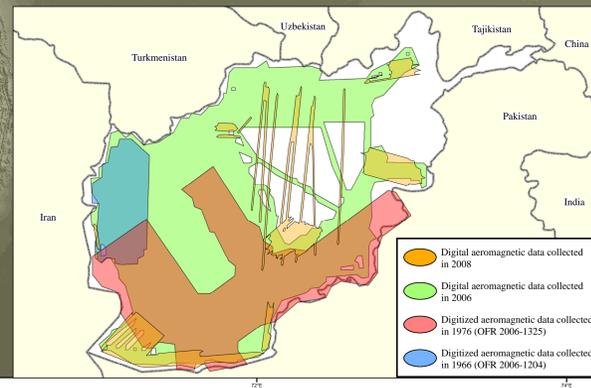
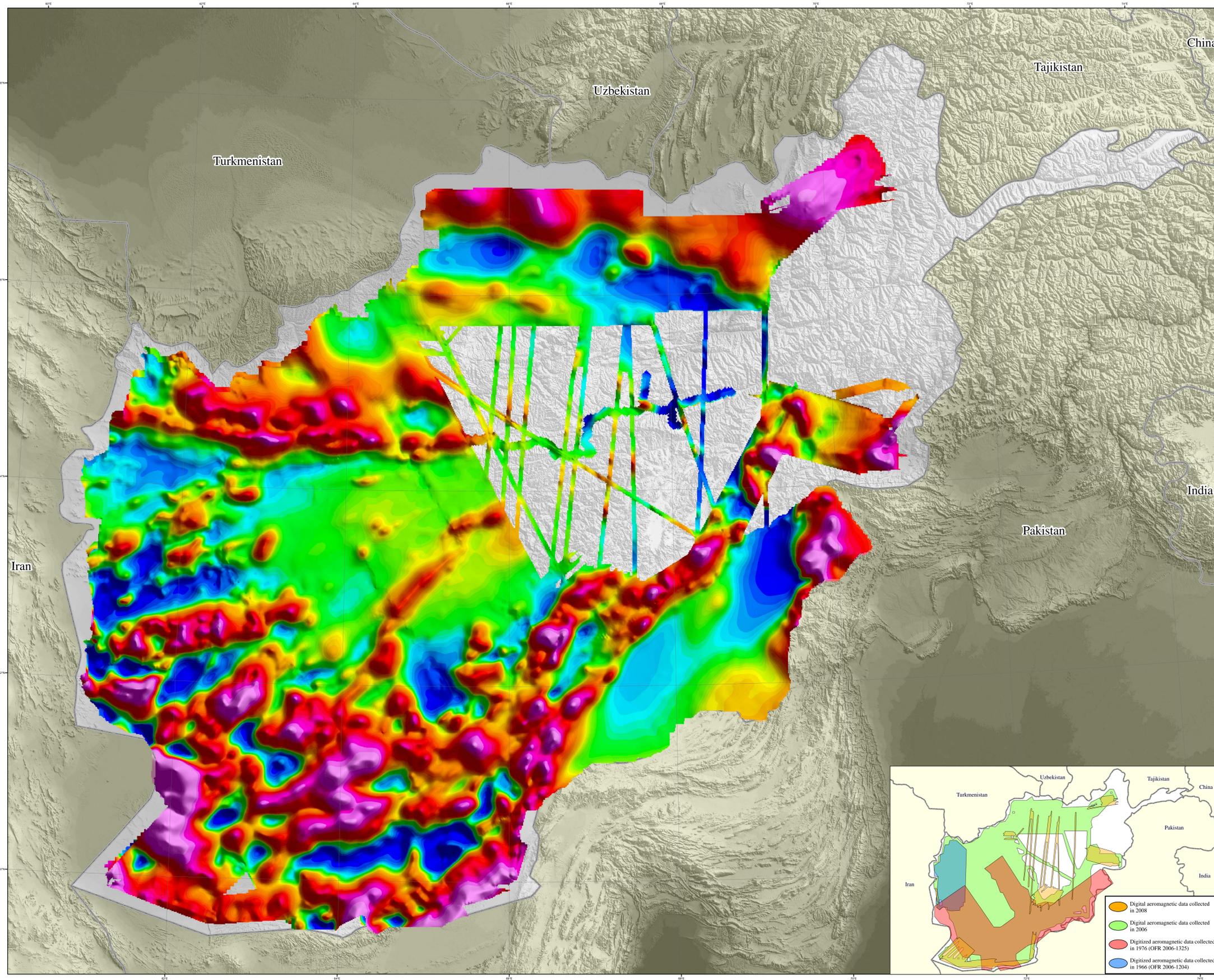
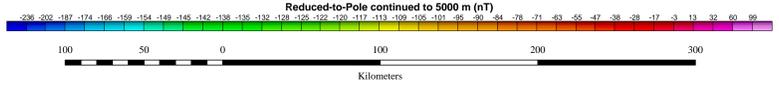


Reduced-to-the-Pole Total Magnetic Intensity of Afghanistan



- Digital aeromagnetic data collected in 2008
- Digital aeromagnetic data collected in 2006
- Digitized aeromagnetic data collected in 1976 (OFR 2006-1325)
- Digitized aeromagnetic data collected in 1966 (OFR 2006-1204)



Authors

Afghanistan Geological Survey (Kabul, Afghanistan)
Ghulam Sakhi Sherwary, Abdul Hakim Kohistay, Sardar Hussain, and Saïd Ashan

Afghanistan Ministry of Mines (Sheberghan, Afghanistan)
Abdul Salam Muttu

Afghanistan Geodesy and Cartography Head Office (Kabul, Afghanistan)
Mohammad Ahmad Daud

U.S. Geological Survey (Denver, Colorado)
Michael D. Weisow, Ronald E. Sweeney, Jeffrey D. Phillips, Charles R. Lindsay, Robert P. Kucks, Carol A. Finn, Benjamin J. Drenth, Eric D. Anderson, and Jared D. Abraham

Naval Research Laboratory (Washington, DC)
John M. Brozna, Robert T. Liang, James L. Jarvis, Joan M. Gardner, Vicki A. Childers, David C. Ball, and John M. Brozna

Abstract

Afghanistan's geologic setting indicates significant natural resource potential. While important mineral deposits and petroleum resources have been identified, much of the country's potential remains unknown. Airborne geophysical surveys are a well-accepted and cost-effective method for obtaining information on the geological setting of an area without the need to be physically located on the ground. Due to the security situation in the large areas of the country of Afghanistan that has not been covered with geophysical exploration methods, a regional airborne geophysical survey was proposed. Acting upon the request of the Islamic Republic of Afghanistan Ministry of Mines, the U.S. Geological Survey contracted with the Naval Research Laboratory to jointly conduct an airborne geophysical and remote sensing survey of Afghanistan. Data collected during this survey will provide basic information for mineral and petroleum exploration studies which are important for the economic development of Afghanistan. Additionally, use of this data is broadly applicable in the assessment of water resources and natural hazards, the inventory and planning of civil infrastructure and agricultural resources, and the construction of detailed maps. The U.S. Geological Survey is currently funded by the U.S. Agency of International Development to conduct resource assessments of the country of Afghanistan for mineral, energy, coal, hazards, and water resources. These geophysical and remote sensing data will be used directly in the resource assessments.

The airborne geophysical and remote sensing survey of Afghanistan was conducted during 2006 and 2008. The P-3 "Orion" conducted 54 individual survey flights, logging over 280 hours of flight time during the survey. Approximately 3% of the land area of Afghanistan was surveyed. The survey area was limited by flight restrictions imposed by U.S. Central Command (CENTCOM). During the survey 125,000 line kilometers of magnetic data, 72,000 line kilometers of gravity data, and 110,000 kilometers of SAR data were collected. Additionally, 150,000 square kilometers of hyperspectral imagery and 300,000 square kilometers of stereo image or photography were collected.

The magnetic anomaly grid from the 2006 and 2008 surveys were subsequently merged with the ground magnetic survey data collected by the Afghan Geological Survey and in U.S. Geological Survey Open-File Report 2007-1247, and the residual magnetic field data found in U.S. Geological Survey Open-File Report 2006-1206 and Open-File Report 2006-1325. All grids were first continued to the nominal elevation of 5000 m above terrain. Subsequent grid merges were then performed using the Oasis montaj grid stitching algorithm 'gridstitch.gs' with a static shift applied to the ground magnetic survey grid and a constant slope shift applied to the data in each of the two optical reports. The final grid was then reduced to the pole using Oasis montaj 'flipole.gs'. This reduced-to-the-pole product provides a view of the magnetic field if the area was located at the magnetic pole.

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