

Statement Concerning Quality of the MISR Ancillary Geographic Product September 19, 2000

This statement applies to the MISR Ancillary Geographic Product, (a.k.a. AGP, MIANCAGP), version F01_24. The quality of this static product was reviewed extensively prior its installation at the Langley ASDC for use by MISR production software in March of 2000.

Introduction

The MISR Ancillary Geographic Product (AGP) is a set of 233 pre-computed files. Each AGP file pertains to a single Terra orbital path. MISR production software relies on information in the AGP, such as digital terrain elevation, as input to the algorithms which generate MISR products. The AGP contains eleven fields of geographical data. For the purpose of this quality statement, the AGP data fields are categorized into the following groups:

Group A: Geographical locations corresponding to a 1.1 km resolution grid defined in the Space Oblique Mercator (SOM) map projection: 1) geographic latitude, and 2) geographic longitude.

Group B.1: Elevation data corresponding to a 1.1 km resolution grid defined in the Space Oblique Mercator (SOM) map projection: 1) point elevation, 2) average scene elevation, and 3) standard deviation of scene elevation.

Group B.2: Regional elevations data corresponding to 17.6 km resolution grid defined in the Space Oblique Mercator (SOM) map projection: 1) regional average scene elevation, and 2) regional standard deviation of scene elevation.

Group C: Surface orientation data corresponding to a 1.1 km resolution grid defined in the Space Oblique Mercator (SOM) map projection: 1) average surface azimuth angle, 2) average surface zenith angle, and 3) standard deviation to the mean surface slope.

Group D: Land/Water identification data corresponding to a 1.1 km resolution grid defined in the Space Oblique Mercator (SOM) map projection: 1) land/water identifier 2) dark water algorithm suitability mask.

The majority of AGP data fields were created using the following datasets as input: 1) Digital Terrain Elevation Dataset (DTED), 2) Digital Chart of the World (DCW) Hypsography, 3) ETOPO5, and 4) World Vector Shoreline. In most cases, the AGP data directly reflects the quality of its inputs without degradation. However, there is a slight reduction in quality due to the processing algorithm used for some of the data fields. The details of the algorithm underlying creation of the AGP can be found in "Level 1 Ancillary Geographic Product ATB" JPL D-13400 Rev. A. The following are quality statements associated with previously defined groups of AGP data fields.

Group A quality statement: A point by point map projection computation was used in order to produce latitude and longitude data for the centers of the 1.1 km resolution grid achieving one centimeter accuracy.

Group B1 quality statement: The point elevation data are directly obtained from the input datasets, and there is no degradation in quality. However, the specific definition of the average scene elevation and standard deviation of scene elevation required a processing step which includes resampling between the input and output grid of same resolution. This processing step caused some reduction of quality, especially in regions with high relief. As the result of global validation for these fields, quality information has been obtained which will be added in the next release of the AGP dataset.

Group B2 quality statement: Due to the low resolution of the recording grid there is no quality degradation for the data fields in this group.

Group C quality statement: As for the average surface azimuth angle and average surface zenith angle, the processing step based on the resampling caused some reduction in quality especially in regions with high relief. As the result of global validation for these fields quality information has been obtained which can be added in the next release of AGP dataset. The standard deviation to the mean surface slope should not be considered reliable. The global validation results indicate that produced values do not match the definition specified in the Algorithm Theoretical Basis document.

Group D quality statement: Overall, the land/water identifiers are as accurate as the input dataset (i.e. World Vector Shoreline) used to derive these data fields. It should be noted that discrepancies exist between some of the Arctic and Antarctic continental and island shoreline as delineated in the elevation fields versus that delineated in the land/water identifier fields. This is result of the input products chosen for data preparation and not a computational error. The WVS is used to delineate all shorelines globally because it represented the most up-to-date delineation at the best scale map available.