

GEO DA-09-03d_3: Update ICEDS information server to provide OGC-compliant access to ASTER 30m DEM data

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HRSC Science Team Member (ESA Mars Express 2003)

Stereo Panoramic Camera Science Team Member (ESA EXOMARS)

MODIS & MISR Science Team Member (NASA EOS Project)

TerraSAR-X and TANDEM-X science team member (DLR-Astrium)

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How ICEDS can contribute to Global DEM Inter-operability

<http://iceds.net/>

- Provide a platform for viewing different sources of DEMs as WMS maps: examples include SRTM (V1 and V2), fused ASTER-SRTM DEM (Three Gorges)
- Display ASTER-GDEM using SRTM colourised hill-shaded WMS LUT including location of all data gaps (as system does currently for SRTMv1 & v2)
- View topography alone or merged with image maps from multiple sources with overlaid best available mapping information
- Compare blue-line (water) datasets derived from SRTM vs derived from traditional maps and in future from ASTER and other sources of DEMs
- View multiple datasets from different sources or different versions using transparency, swipe and flicker as well as on-the-fly height difference maps
- Assess any planimetric offsets using flicker between DEMs and derive amount
- Browse any WMS server images including internal datasets from within a firewall in context or for inter-comparison
- Provide links to WCS pixel filler datasets, identified by data gaps
- Explore online several GEOSS applications by adding RSS models at the regional, continental and global scale (e.g. tsunami impact on global population, dispersal of chemical or nuclear releases)

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Example 1: SRTM V2 with (old) ASTER-DEM footprint locations superimposed

ICEDS - Integrated CEOS European Data Server

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Available WMS layers:

- Map Drawing (ICEDS)
- Current Weather (CurrentWeather)
- Climate Outlook (ClimateOutlook)
- Global Surface Water (GSW)
- World National Boundaries (WNA)
- World National Boundaries (WNA)
- Administrative Info (ADM)
- SRTM Water Bodies (SRTMWB)
- USGS ASTER DEM Footprints
- ASTER 1 Three Gorges
- SRTM Version 2 terrain
- SRTM terrain
- SRTM DEM Version 2
- SRTM DEM Version 2
- SRTM DEM
- Bathymetry (BATH)
- LANCEM 3
- MODIS Global Fire (MODISGF)
- MODIS Blue Marble

Update the map

Select a layer effect Properties

Find Location

All Feature Types
Populated Places
Administrative

Browse WMS

<http://iceds.net>

Scale: 233623

Select the layers from the above list, then scroll down and click on the button to update the map. For the complete list of WMS URLs please click [here](#).

More info on the ICEDS project is available [here](#).

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Example 2: SRTM V2 with (old) ASTER-DEM footprints, SRTM water and transparency

ICEDS - Integrated CEOS European Data Server

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Available WMS layers:

- Map Drawing (ICEDS)
- Climate Outlook (ClimateOutlook)
- Global Surface Water (GSW)
- World National Boundaries (WNA)
- Administrative Info (ADM)
- SRTM Water Bodies (SRTMWB)
- USGS ASTER DEM Footprints
- ASTER 1 Three Gorges
- SRTM Version 2 terrain
- SRTM terrain
- SRTM DEM Version 2
- SRTM DEM Version 2
- SRTM DEM
- Bathymetry (BATH)
- LANCEM 3
- MODIS Global Fire (MODISGF)
- MODIS Blue Marble

Update the map

Select a layer effect Properties

Find Location

All Feature Types
Populated Places
Administrative

Browse WMS

<http://iceds.net>

Select layer and transparency: Map Drawing (ICEDS) | 1 | Make change | Cancel

- Map Drawing (ICEDS)
- SRTM water bodies mask
- USGS ASTER DEM Footprints
- ASTER 1 Three Gorges
- SRTM terrain
- MODIS Blue Marble

Select the layers from the above list, then scroll down and click on the button to update the map. For the complete list of WMS URLs please click [here](#).

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Example 3: ASTER-SRTM merged DEM with SRTM-derived and NOAA rivers (note errors!)

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Available WMS layers

- Map Overlay (CEOS)
- Global Weather (CustomWeather)
- Global clouds (CustomWeather)
- GPS surface winds (J2-00-02)
- World Natural Resources (NOAA)
- Water features (NOAA)
- Rivers
- Coast line
- Administrative Info (NOAA)
- SRTM water backscatter
- SRTM water elevation
- USGS ASTER DEM Footprint
- African geological maps (GSI/FAO)
- ASTER 3 Theta Georgia
- SRTM version 2 sample
- SRTM contour
- SRTM DEM version 2
- SRTM3 DEM version 1
- SRTM3 DEM
- Bathymetry (GEBCO)
- LAMDEAT 5
- Oceanographic Imagery (ERS)
- Update 2 mosaic
- SRTM Amphibious mosaic
- MODIS Rapid Fire (GIST/NOAA)
- MODIS Blue Marble

<http://iceds.net>

Select the layers from the above list, then scroll down and click on the button to update the map

For the complete list of WMS URLs please click [here](#)

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Example 4: ASTER-SRTM merged DEM with SRTM-water and SRTM backscatter image

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Available WMS layers

- Map Overlay (CEOS)
- Global Weather (CustomWeather)
- Global clouds (CustomWeather)
- GPS surface winds (J2-00-02)
- World Natural Resources (NOAA)
- Water features (NOAA)
- Rivers
- Coast line
- Administrative Info (NOAA)
- SRTM water backscatter
- SRTM water elevation
- USGS ASTER DEM Footprint
- African geological maps (GSI/FAO)
- ASTER 3 Theta Georgia
- SRTM version 2 sample
- SRTM contour
- SRTM DEM version 2
- SRTM3 DEM version 1
- SRTM3 DEM
- Bathymetry (GEBCO)
- LAMDEAT 5
- Oceanographic Imagery (ERS)
- Update 2 mosaic
- SRTM Amphibious mosaic
- MODIS Rapid Fire (GIST/NOAA)
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Select the layers from the above list, then scroll down and click on the button to update the map

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ICEDS next steps

- Plan to order all ASTER GDEM tiles and then colourise DEMs using the existing colour LUT and publish these as a new WMS layer. This WMS can be combined with the greyscale SAR backscatter global mosaics being provided by WMS servers at JAXA (ALOS-PALSAR) and ESA (ENVISAT-ASAR) as well as SRTM-C at JPL
- Stacking number will also be provided as grayscale or colour
- SRTM and ASTER will also be provided as grayscale shaded and grayscale intensity->height so that they can be easily combined using transparency with colour image datasets representing Landsat-5 and 7, SRTM-X
- ASTER-SRTM height differences will also be supplied as coloured or grayscale WMS
- SRTM-X DEM WMS to be added as and when made available by DLR
- Plan to add function to allow users to display transects (X_only, Y_only and arbitrary)
- Using the ESA-ESRIN “on-the-fly” convertor (OGC-KML), all ICEDS datasets will be easily displayable in Google Earth for 3D viewing
- All ICEDS datasets to be made compatible with iPhone and other PDA displays in a tbd manner

CEOS-WGCV ACTION points

- CEOS to encourage METI through SIT to remove the re-distribution restriction to permit ICEDS to display ASTER GDEM products
- CEOS to encourage BNSC to support ICEDS as a GEO portal service
- CEOS to support the idea that “ICEDS should include localized validation DEM data and associated quality information (e.g. gap locations; number of ASTER observations per pixel, etc.) by encouraging USGS to release user-supplied validation datasets for the AOC activity
- CEOS to encourage member space agencies to set-up an ICEDS WMS server for their own DEMs (DLR for SRTM-X; SPOT Image for Ref3D; ISRO for P5; JAXA for ALOS-PRISM/PALSAR) in line with the CEOS recommendation agreed by CEOS Plenary.
- Specifically CEOS-WGCV Chair to invite representatives of each of the aforementioned agencies at CEOS Plenary to submit a short (5-10 slides) presentation to TMSG Chair at each WGCV Plenary to describe progress towards providing WMS services of their DEM products