

SESES ESDR's Description, Definition, Needs and Details						
ESDR	ESDR Description	Product Level	Definition, Needs and Uses of ESDR(*)	Source	Source of algorithm for ESDR	Comments + Description of MEaSURES 2012 tasks
<i>GPS Observables and Metadata</i>	Observation files organized by year and day of year, in RINEX format. Relevant metadata accessible through project's Site Information Manager ( <a href="http://sopac.ucsd.edu/scripts/SIMpl_launch.cgi">http://sopac.ucsd.edu/scripts/SIMpl_launch.cgi</a> ) and via Web Services from SOPAC's ORACLE database	0	Raw GPS observable used by scientists, surveyors and others for calculating geodetic coordinates and their time history	Generated by GPS networks funded by NASA, NSF, USGS, NOAA and other agencies. Includes SCIGN, PBO, PANGA, BARD, and NASA's Global GPS Network (GGN) and the International GNSS Service	N/A Instrument Data	N/A
<b>Long-Term Raw Position Time Series</b>	Daily, long-term time series of CGPS station positions (global and regional) in the latest version of ITRF, automatically updated weekly	1A	Forms the basis for all high-level products; ESDR identified in the Earth Surface and Interiors Road Map, SESWG report, and Decadal Survey; Addresses GEOSS Strategic Target area 2.4 Disasters.	Produced by SESES MEaSURES from independent processing using GIPSY and GAMIT software packages, followed by verification and validation into a combined official time series.	MEaSURES 2006	Produced by SESES and disseminated through SESES web portal - <i>GPS Explorer</i> . Full product description available in section 1.3.1.1 and in SESES Algorithm Theoretical Basis Document (ATBD, 2007). <b>Under MEaSURES 2012 these ESDR's geographical coverage will be extended globally.</b>
<b>Global Tropospheric Delay Time Series</b>	Long-term time series of troposphere delay (up to 5-min resolution) at geodetic stations (global and regional), necessarily estimated during position time series production and automatically updated weekly	1B	Forms the basis for Precipitable Water Vapor (PWV) ESDR and calibration maps for InSAR. Addressing GEOSS Strategic Target areas 2.4 Disasters and 2.9 Weather.		AIST-08	<b>New ESDR. For a full description see section 1.3.1.2 To be disseminated through SESES web portal - GPS Explorer.</b>
<b>Global Calibrated and Validated ("Cleaned") Position Time Series</b>	Automated weekly update of GIPSY and GAMIT combined global calibrated and validated daily time series; data outliers have been removed and instrumental offsets identified	1C	Forms the basis for all higher-level products. Need identified in the SESWG report and Decadal Survey. GEOSS Strategic Target area 2.4 Disasters	Produced by SESES MEaSURES from independent processing using GIPSY and GAMIT software packages, followed by verification and validation into a combined official time series.	MEaSURES 2006	Produced by SESES and disseminated through SESES web portal - <i>GPS Explorer</i> . Full product description available in section 1.3.1.1 and in SESES Algorithm Theoretical Basis Document (ATBD, 2007). <b>Under MEaSURES 2012 these ESDR's geographical coverage will be extended globally.</b>
<b>Precipitable Water Vapor</b>	Long-term time series of precipitable water vapor (PWV) at geodetic (global and regional) stations, with up to 5-min resolution, automatically updated weekly	2A	Long-term monitoring of PWV addresses key areas of uncertainty in the climate system and its potential changes ( <i>Gaffen, 2000</i> ). Addressing GEOSS Strategic Target areas 2.4 Disasters, 2.9 Weather, 2.8 Water and 2.3 Climate	To be produced by SESES MEaSURES using a combination of tropospheric delays necessarily estimated in time series processing and atmospheric data.	[Davis, 1985; Bevis, 1992] JPL Internal Research & Technology Development	<b>New ESDR. Full product description available in section 1.3.1.2 To be disseminated through SESES web portal - GPS Explorer.</b>
<b>Filtered Position Time Series &amp; Residual Time Series</b>	Automated PCA-filtered position time series with coseismic, postseismic, seasonal (annual & semiannual) terms modeled; residual time series also available as well as all model terms	2B	Forms the basis for all higher-level products. Need identified in the SESWG report and Decadal Survey. GEOSS Strategic Target area 2.4 Disasters	Produced by SESES MEaSURES using the JPL 'analyze_tseri' software package and the JPL publicly available 'st_filter' (QOCA) software package.	MEaSURES 2006	Produced by SESES and disseminated through SESES web portal - <i>GPS Explorer</i> . Full product description available in section 1.3.1.1 and in SESES Algorithm Theoretical Basis Document (ATBD, 2007). <b>Under MEaSURES 2012 these ESDR's geographical coverage will be extended globally.</b>
<b>Tectonic Parameters (Velocities, Permanent Seismic Deformation)</b>	Weekly updated velocity field + velocity field histories in various reference frames; compendium of all model parameters including earthquake catalog, coseismic offsets, and postseismic model parameters (exponential or logarithmic)	3A	Long-term, high-resolution monitoring of changes in Earth's surface addressing ESE goals in SES. Need identified in the SESWG report and Decadal Survey. GEOSS Strategic Target area 2.4 Disasters	Produced by SESES MEaSURES using the JPL 'analyze_tseri' software package and the JPL publicly available 'st_filter' (QOCA) software package.	MEaSURES 2006	Produced by SESES and disseminated through SESES web portal - <i>GPS Explorer</i> . Full product description available in section 1.3.1.1 and in SESES Algorithm Theoretical Basis Document (ATBD, 2007). <b>Under MEaSURES 2012 these ESDR's geographical coverage will be extended globally.</b>
<b>High-rate broadband displacement and seismic velocity time series for historic large thrust and transform earthquakes</b>	High-rate broadband displacement and seismic velocity time series based on a combination of 1 Hz GPS displacements and 100 Hz strong-motion (accelerometer) data for select large earthquakes and collocated CGPS and seismic instruments from regional networks	3B	High-rate high-accuracy (1 mm in all three components) displacements for researching finite fault slip models, earthquake early warning and rapid reponse algorithms, and development of real-time GPS software. Addressing GEOSS Strategic Target area 2.4 Disasters.	Generated by smoothed Kalman filter algorithms ( <i>Bock et al., 2011</i> ) developed under NASA AIST-08 project (Y. Bock, PI) and precise point positioning (PPP) software with ambiguity resolution being developed under recently awarded NASA AIST-12 project (Y. Bock, PI).	AIST 2008	<b>New ESDR.</b> Earthquakes includes 2003 Mw 8.3, 2004 Mw 6.0 Parkfield, Tokachi-oki, 2010 Mw 7.2 El Mayor-Cuapah, 2011 Mw 9.0 Tohoku-oki, and other earthquakes as data become available. For a full description see section 1.3.1.3.