

Global Analysis specifications

Analysis scheme	Incremental 4D-Var
Data cut-off time	2 hours and 20 minutes for early run analysis at 00, 06, 12 and 18 UTC 11 hours and 50 minutes for cycle run analysis at 00 and 12 UTC 7 hours and 50 minutes for cycle run analysis at 06 and 18 UTC
First guess	6-hour forecast by the GSM
Grid form, resolution and number of grids	Reduced Gaussian grid, roughly equivalent to 0.1875° [1920 (tropic) – 60 (polar)] x 960
Vertical levels	100 forecast model levels up to 0.01 hPa + surface
Analysis variables	Wind, surface pressure, specific humidity and temperature
Observation (as of 31 August 2018)	SYNOP, METAR, SHIP, BUOY, TEMP, PILOT, Wind Profiler, AIREP, AMDAR; atmospheric motion vectors (AMVs) from Himawari-8, GOES-15, Meteosat-8,11; MODIS polar AMVs from Terra and Aqua satellites; AVHRR polar AMVs from NOAA and Metop satellites; LEO-GEO AMVs; ocean surface wind from Metop-A, B/ASCAT; radiances from NOAA-15, 18, 19/ATOVS, Metop-A, B/ATOVS, Aqua/AMSU-A, DMSP-F17, 18/SSMIS, Suomi-NPP/ATMS, GCOM-W/AMSR2, GPM-core/GMI, Megha-Tropiques/SAPHIR, Aqua/AIRS, Metop-A,B/IASI; Suomi-NPP/CrIS, clear sky radiances from the water vapor channels (WV-CSRs) of Himawari-8, GOES-15, Meteosat-8, 11; GNSS RO bending angle data from Metop-A, B/GRAS, COSMIC/IGOR, GRACE-A, B/blackjack, TerraSAR-X/IGOR, zenith total delay data from ground-based GNSS
Assimilation window	6 hours

Snow depth analysis specifications

Methodology	Two-dimensional Optimal Interpolation scheme
Domain and grids	Global, $1^\circ \times 1^\circ$ equal latitude-longitude grids
First guess	Derived from previous snow depth analysis and USAF/ETAC Global Snow Depth climatology (Foster and Davy 1988)
Data used	SYNOP snow depth data
Frequency	Daily

Foster, D. J. and R. D. Davy, 1988: *Global Snow Depth Climatology*. USAF-ETAC/TN-88/006. Scott Air Force Base, Illinois, p. 48.