**Predictors, Iteration 2**

All predictors are created from the operational (v. 2018) HWRF model, using the outermost grid and the innermost grid (with 1.5-km grid spacing). In the majority of cases, the Inner-core type predictors focus on the innermost grid, while environmental-type predictors are defined on the outer grid.

Predictors are currently produced from 0-126 h per forecast per storm, although the data below in the one example we have to work with is only shown out to 30 h since there was no forecast data beyond 30 h in this particular example. The data are currently output to ASCII format.

**Description of data and predictors below**

**TIME** : Forecast time in h

**LAT** :Latitude of storm center (deg N)

**LON** : Longitude of storm center (deg E)

**MAXWIND** : Storm intensity (surface-wind speed) (kt) (IC)

**RMW** : Radius of maximum surface wind speed (km) (IC)

**MIN\_SLP** : Minimum sea level pressure (hPa) (IC)

**SHR\_MAG** : 850-200 hPa vertical wind shear magnitude (kt) (*r* = 0 – 500 km) (EN, IC)

**SHR\_HDG** : 850-200 hPa vertical wind shear heading (deg) (EN, IC)

**STM\_SPD** : Estimated storm speed (kt) (EN, IC)

**STM\_HDG** : Estimated storm motion direction (deg) (EN, IC)

**SST** : Sea-surface temperature (100C) (*r* = 0 – 50 km) (EN)

**OHC** : Not available (Ocean heat content)

**TPW** : Total precipitable water (mm) (*r* = 0 – 200 km) (IC, EN)

**LAND** : Distance of storm from land (km)

**850TANG** : Average 850-hPa tangential wind (10 m s-1) (*r* = 0 – 600 km) (IC, EN)

**850VORT** : Average 850-hPa relative vorticity (10-7 s-1) (*r* = 0 – 1000 km) (IC, EN)

**200DVRG** : Average 200-hPa divergence (10-7 s-1) (*r* = 0 – 1000 km) (IC, EN)

**RHLO** : Relative humidity 850-700 hPa (10%) (*r*  = 200 – 800 km) (EN, IC)

**RHMD** : Relative humidity 700-500 hPa (10%) (*r*  = 200 – 800 km) (EN, IC)

**RHHI** : Relative humidity 500-300 hPa (10%) (*r*  = 200 – 800 km) (EN, IC)

**CAPE1** : Convective Available Potential Energy (J kg-1) (*r* = 0 – 100 km) (EN, IC)

**CAPE2** : Convective Available Potential Energy (J kg-1) (*r* = 100 – 200 km) (EN, IC)

**CAPE3** : Convective Available Potential Energy (J kg-1) (*r* = 200 – 500 km) (EN, IC)

**LHTFL1** : Surface turbulent latent heat flux (W m-2) (*r* = 0 – 100 km) (IC, EN)

**LHTFL2** : Surface turbulent latent heat flux (W m-2) (*r* = 100 – 200 km) (IC, EN)

**LHTFL3** : Surface turbulent latent heat flux (W m-2) (*r* = 200 – 500 km) (IC, EN)

**SHTFL1** : Surface turbulent sensible heat flux (W m-2) (*r* = 0 – 100 km) (IC, EN)

**SHTFL2** : Surface turbulent sensible heat flux (W m-2) (*r* = 100 – 200 km) (IC, EN)

**SHTFL3** : Surface turbulent sensible heat flux (W m-2) (*r* = 200 – 500 km) (IC, EN)

**VMAXMPI** : Emanuel MPI calculation (kt) (*r* = 0 – 50 km) (EN, IC)

**POT** : VMAXMPI – MAXWIND (kt) (IC, EN)

**TGRD** : 850-700 hPa temperature gradient (*r* = 200 – 800 km) (EN)

**IKE1** : Integrated tangential wind kinetic energy at 850 hPa (1012 kg m s-2) (*r* = 0 – 500 km) (IC)



**IKE2** : Integrated tangential wind kinetic energy at 850 hPa (1012 kg m s-2) (*r* = 0 – 1000 km) (IC)

**TCOND7001** : Average 700-hPa total condensate (10 g kg-1) (*r* = 0 – 50 km) (IC)

**TCOND7002** : Average 700-hPa total condensate (10 g kg-1) (*r* = 0 – 100 km) (IC)

**TCOND7003** : Average 700-hPa total condensate (10 g kg-1) (*r* = 100 – 250 km) (IC)

**TCONDALL1** : Average 850-500 hPa total condensate (10 g kg-1) (*r* = 0 – 50 km) (IC)

**TCONDALL2** : Average 850-500 hPa total condensate (10 g kg-1) (*r* = 0 – 100 km) (IC)

**TCONDALL3** : Average 850-500 hPa total condensate (10 g kg-1) (*r* = 100 – 250 km) (IC)

**INST1** : 850-500 hPa inertial stability parameter (10-4 s-2) (*r* = 0 – 50 km) (IC)

**INST2** : 850-500 hPa inertial stability parameter (10-4 s-2) (*r* = 0 – 100 km) (IC)

**INST3** : 850-500 hPa inertial stability parameter (10-4 s-2) (*r* = 100 – 250 km) (IC)

**CP1** : 850-500 hPa inert. stab. + pos. vert. mot. coupling parameter (10-4 Pa s-3) (*r* = 0 – 50 km) (IC)

**CP2** : 850-500 hPa inert. stab. + pos. vert. mot. coupling parameter (10-4 Pa s-3) (*r* = 0 – 100 km) (IC)

**CP3** : 850-500 hPa inert. stab. + vert. mot. coupling parameter (10-4 Pa s-3) (*r* = 100 – 250 km) (IC)

**TCONDSYM1** : 850-500 hPa TCOND symmetry parameter *s* (10%) (*r* = 0 – 50 km)(IC)

where the overbar represents an azimuthal average. Adapted from Miyamoto and Takemi (2014; *J. Atmos. Sci.*)

**TCONDSYM2** : 850-500 hPa TCOND symmetry parameter (10%) (*r* = 0 – 100 km)(IC)

**TCONDSYM3** : 850-500 hPa TCOND symmetry parameter (10%) (*r* = 100 – 250 km)(IC)

**INERTSYM1** : 850-500 hPa inert. stab. symmetry parameter (10%) (*r* = 0 – 50 km)(IC)

**INERTSYM2** : 850-500 hPa inert. stab. symmetry parameter (10%) (*r* = 0 – 100 km)(IC)

**INERTSYM3** : 850-500 hPa inert. stab. symmetry parameter (10%) (*r* = 100 – 250 km)(IC)

**COUPLSYM1** : 850-500 hPa coupling CP1 parameter (10%) (*r* = 0 – 50 km)(IC)

**COUPLSYM2** : 850-500 hPa coupling CP2 parameter (10%) (*r* = 0 – 100 km)(IC)

**COUPLSYM3** : 850-500 hPa coupling CP3 parameter (10%) (*r* = 100 – 250 km)(IC)

**WALLA1** : Average 850-500 hPa upward motion (Pa s-1) (*r* = 0 – 50 km) (IC)

**WALLA2** : Average 850-500 hPa upward motion (Pa s-1) (*r* = 0 – 100 km) (IC)

**WALLA3** : Average 850-500 hPa upward motion (Pa s-1) (*r* = 100 – 250 km) (IC)

**USFC1** : Radial flow @ surface (m s-1) (*r* = 0 – 50 km) (IC)

**USFC2** : Radial flow @ surface (m s-1) (*r* = 0 – 100 km) (IC)

**USFC3** : Radial flow @ surface (m s-1) (*r* = 100 – 250 km) (IC)

**WSYM1** : 850-500 hPa vertical motion symmetry parameter (10%) (*r* = 0 – 50 km)(IC)

**WSYM2** : 850-500 hPa vertical motion symmetry parameter (10%) (*r* = 0 – 100 km)(IC)

**WSYM3** : 850-500 hPa vertical motion symmetry parameter (10%) (*r* = 100 – 250 km)(IC)

**USFCSYM1** : Surface Radial flow symmetry parameter (10%) (*r* = 0 – 50 km)(IC)

**USFCSYM2** : Surface Radial flow symmetry parameter (10%) (*r* = 0 – 100 km)(IC)

**USFCSYM3** : Surface Radial flow symmetry parameter (10%) (*r* = 100 – 250 km)(IC)

**vmax\_bt\_new:** best track observation of VMAX

Notes:

IC refers to inner-core-type predictors

EN refers to environment-type predictors