

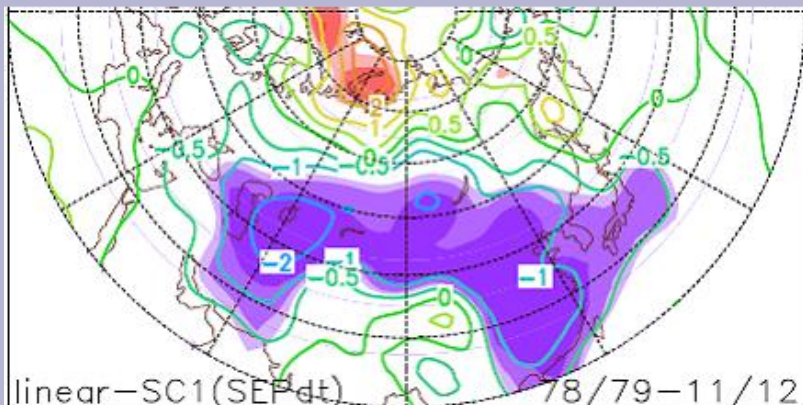
# Arctic Influence on Weather and Climate in Japan

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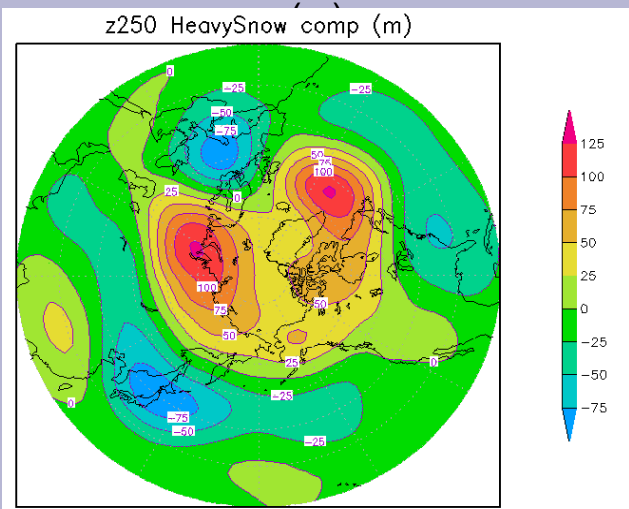
GRENE-Arctic

T1000 (DJF) on Siberian sea ice index in Sep (K/std)



Updated from Honda et al 2009

Z250 composite for heavy snow months in Japan for 1958-2008



Mabuchi in prep

| Honda et al. 2009               | New experiments                  |
|---------------------------------|----------------------------------|
| AGCM for Earth Simulator (AFES) |                                  |
| T42L20, 8hPa                    | T79L56, 0.08 hPa                 |
| Seasonal ensemble run (n=28)    | Perpetual run for 20yrs x 2 sets |
| SST climate                     | SST (1979-83 ave)                |
| Siberia sea ice                 | NH sea ice                       |



BC: Merged Hadley-NOAA/OI SST and SIC (Hurrell et al., 2008) and fixed CO<sub>2</sub>, CH<sub>4</sub>, CFCs, O<sub>3</sub>, aerosols, and solar

|                 | Run yrs | SST <30N       | SST >50N | SEA ICE          |
|-----------------|---------|----------------|----------|------------------|
| <i>CNTL</i>     | 20      | Past (1979-83) | Past     | Past             |
| <i>Global</i>   | 20      | Recent         | Recent   | Recent           |
| <i>Northern</i> | 20      | Past           | Recent   | Recent           |
| <i>N.ICE</i>    | 20      | Past           | Past     | Recent (2005-09) |



Evaluating the difference

Arctic Linkages  
2013.09.12-13

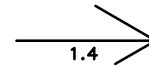
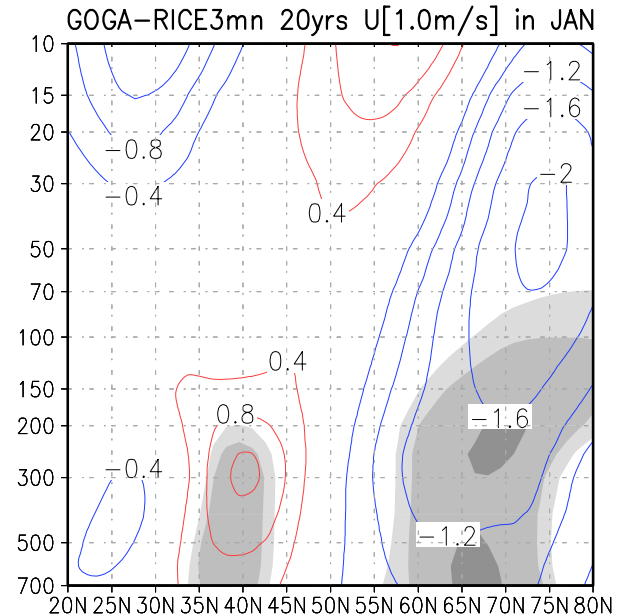
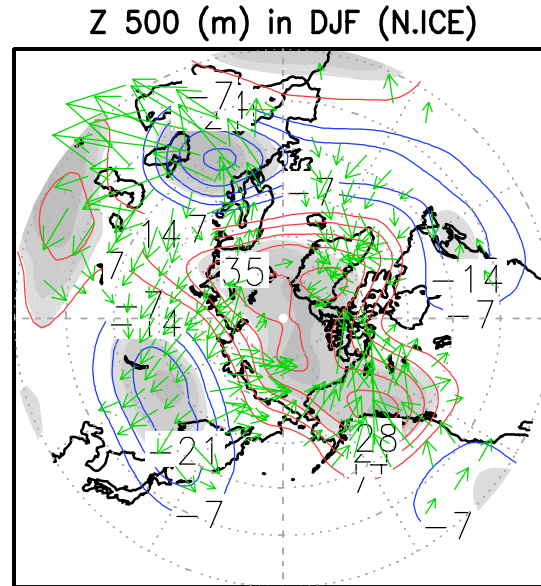
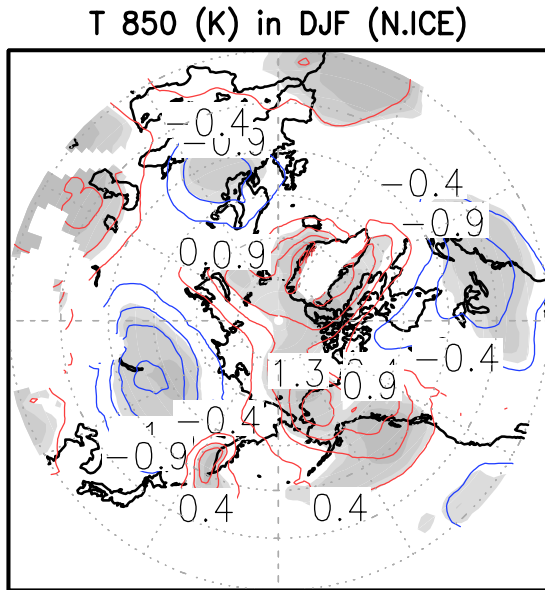
# Preliminary Results (DJF ave)

2005-2009 mean - 1979-1983 mean

T850

Z500

$\bar{U}$



Ukita in prep

- In temperature: warming over the Arctic Ocean and cooling in Siberia, eastern Europe and eastern North America
- In mid-troposphere: enhancement of wave 2-3 pattern
- In zonal-mean zonal wind: negative anomalies in high latitudes with an indication of the stratosphere-troposphere connection