

Intraseasonal forecast project

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TARGET:

Range of 10-30 days, between medium-range and seasonal forecasts

PRODUCTS:

forecasts of monthly, 10-day, 7-day and 5-day means (for surface air temperature, precipitation, 500 hPa height, etc)

Source of skill:

initial condition (e.g. state of MJO)

anomaly in boundary condition (e.g. SST)

Current monthly forecasting system

- Based on seasonal forecasting system
- 4 models (GEM, SEF, GCM2 and GCM3)
- persistent boundary anomaly (from last month)
- 10 members for each model
- 12-hour lagged initial conditions

Main shortcoming: initial conditions

Proposed monthly forecasts

- EPS initial conditions → kalman filter generated 21 members
- persistent SST anomaly
- 35 day integrations
- forecast frequency: 3 times a month (1st, 11th, 21st)
- GEM global, perturbed physics

Status:

- It is running in experimental mode since May 1, 2009
- Verifications to be conducted for the recent 6 months, with comparison to EPS and current monthly forecasts

Hindcast experiment for ISO prediction

- Follow-up activity of the US CLIVAR MJO project
- Multi-Model ensemble (MME) approach
- 16 participating groups (ABOM, COLA, ECMWF, GFDL, IAP, JAMSTEC, NASA, NCEP, SNU, IPRC, UM, FSU, INGV, CMC, CWB, BCC)

OBJECTIVES OF ISO HINDCAST EXPERIMENT

- Better understanding of the physical basis for intraseasonal prediction. Determine potential and practical predictability of ISO in a multi-model framework.
- Developing optimal strategies for multi-model ensemble (MME) ISO prediction system, including effective initialization schemes and quantification of the MME's ISO prediction skills with forecast metrics under operational conditions.
- Identifying model deficiencies in predicting ISO and finding ways to improve models' convective and other physical parameterizations relevant to the ISO through development of model process diagnostics.

ISO Hindcast with GEM

- GEM clim (same configuration as HFP2)
- 1985-2008
- 3 times a month (1st, 11th and 21st)
- 10-member ensemble (balanced perturbation to NCEP reanalysis)
- persistent SST anomaly
- 45-day integrations
- **Integration completed**

Use of GEM hindcast data

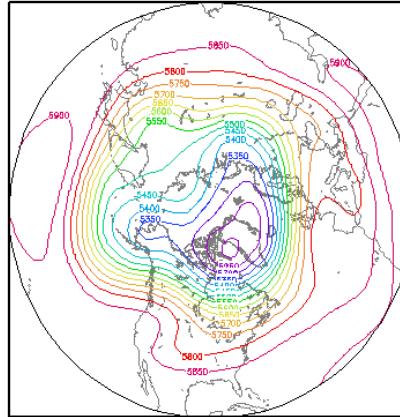
- Participation in the ISO hindcast project
- Bias correction for the newly proposed monthly forecasts

Example of the forecast initialized at 2009-09-21

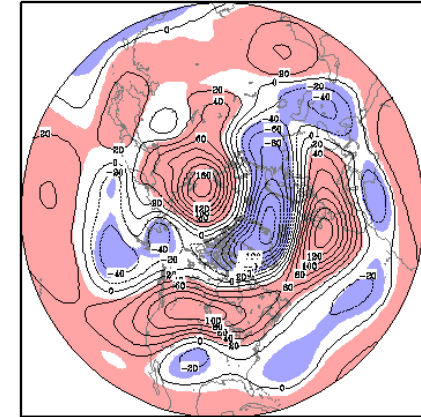
Before bias correction

500mb geopotential height

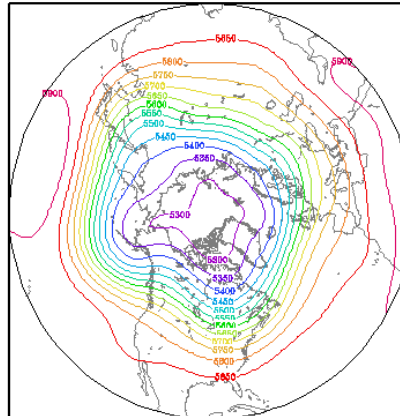
a) 1st 10-day mean Z500



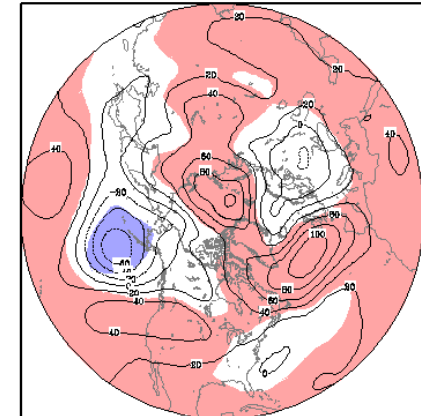
b) 1st 10-day Z500 anomaly



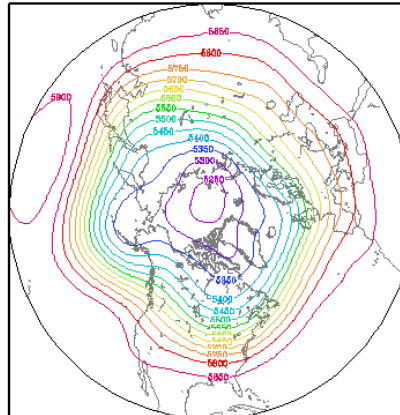
c) 2nd 10-day mean Z500



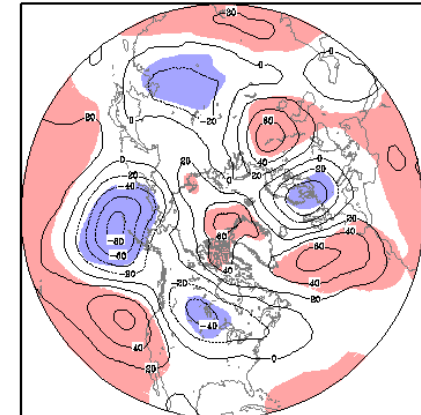
d) 2nd 10-day Z500 anomaly



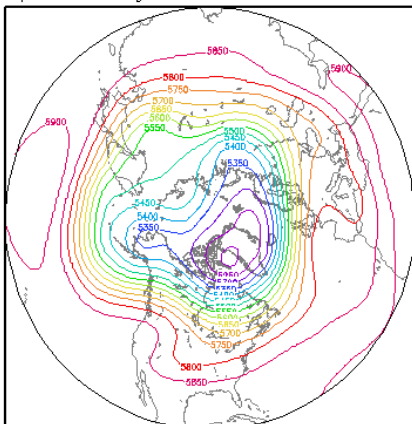
e) 3rd 10-day mean Z500



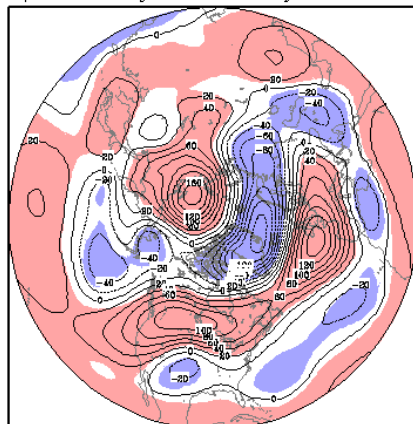
f) 3rd 10-day Z500 anomaly



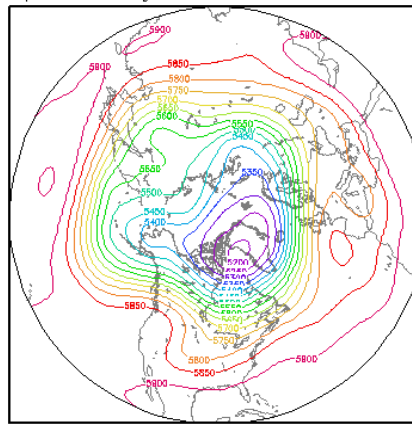
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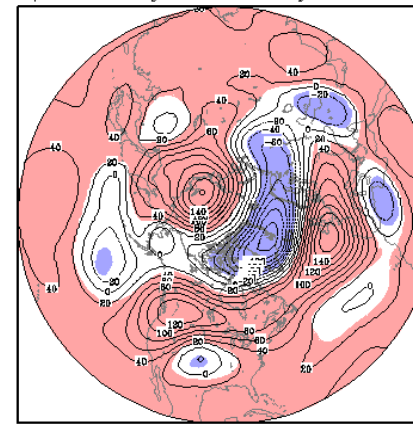
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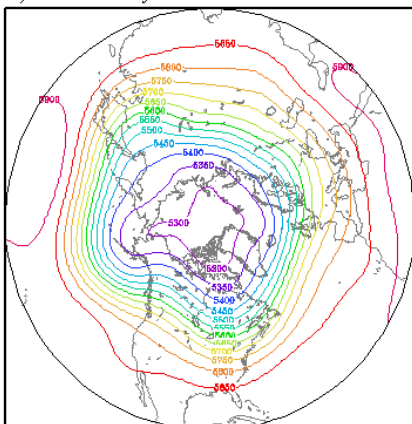
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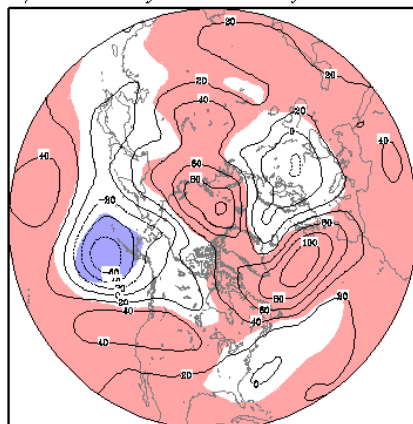
b) 1st 10-day Z500 anomaly



c) 2nd 10-day mean Z500



d) 2nd 10-day Z500 anomaly



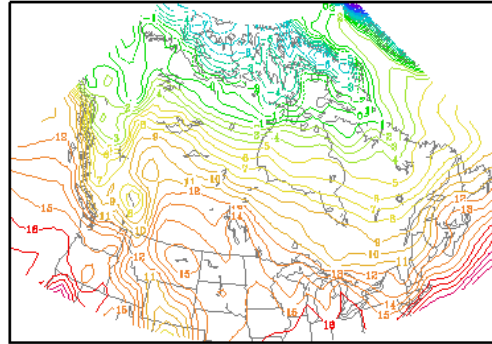
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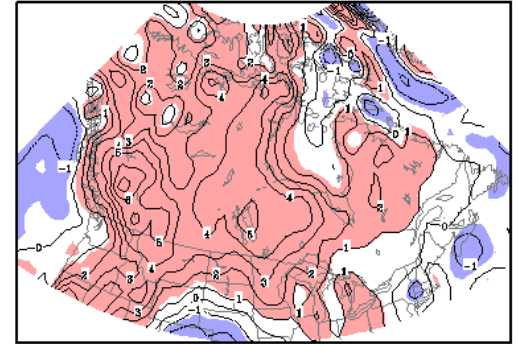
Before bias correction

Surface air temperature

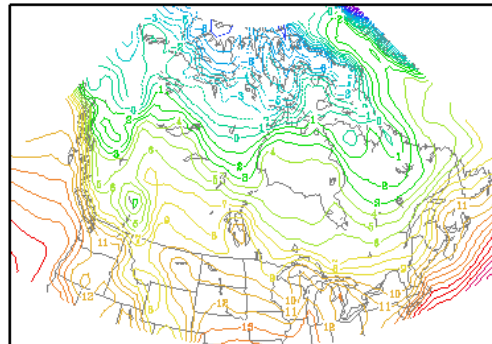
a) 1st 10-day mean TT



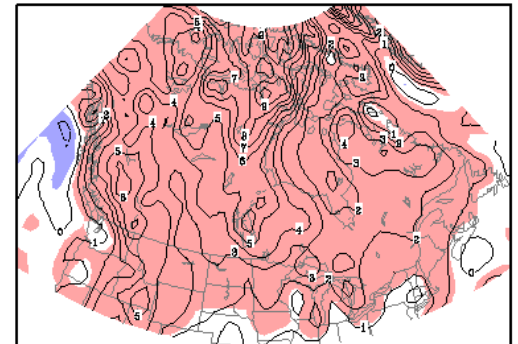
b) 1st 10-day TT anomaly



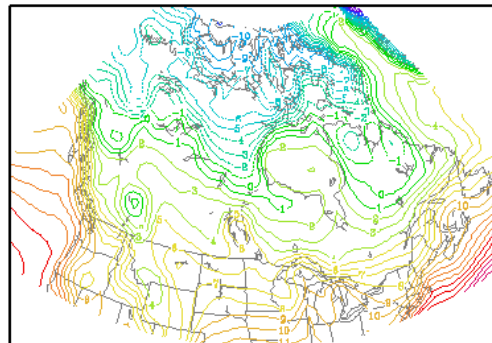
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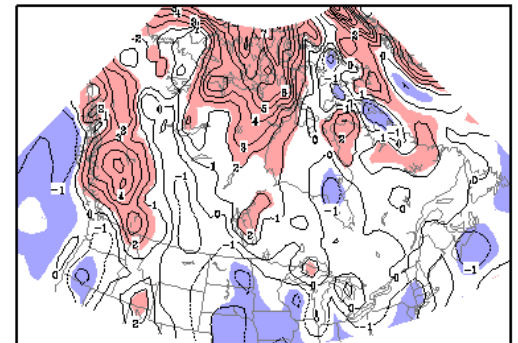
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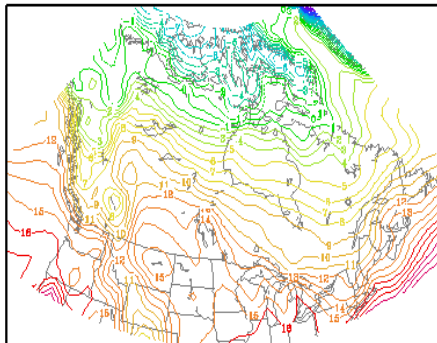
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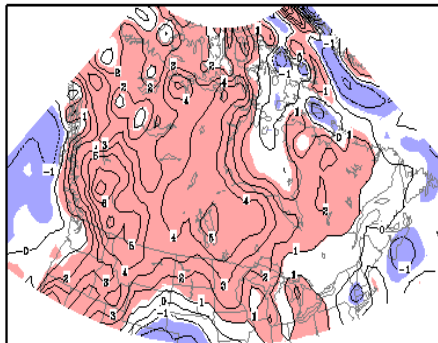
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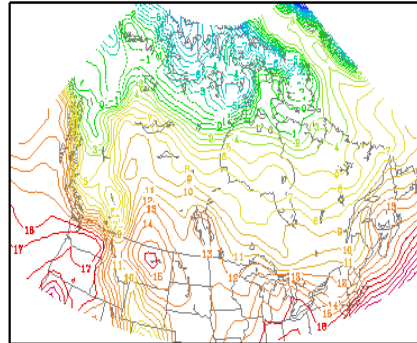
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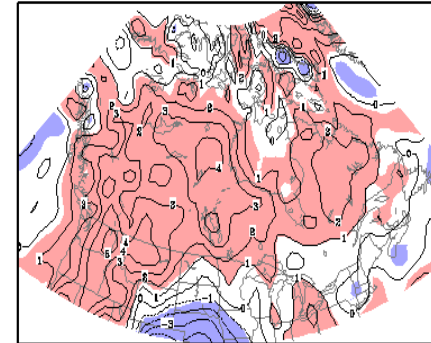
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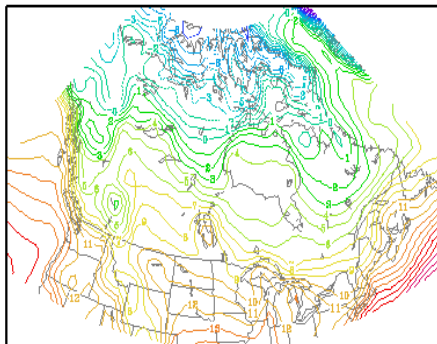
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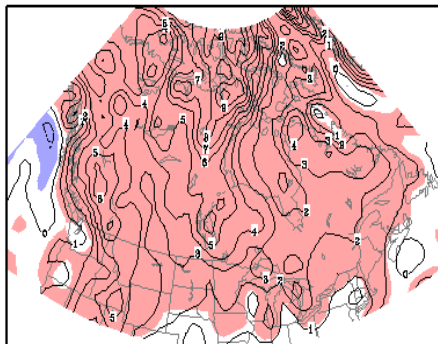
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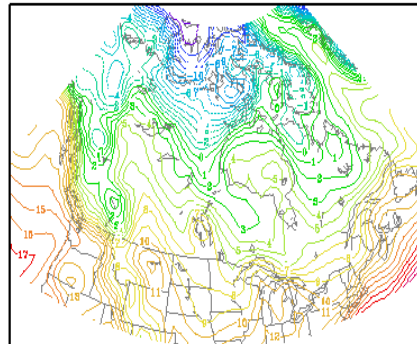
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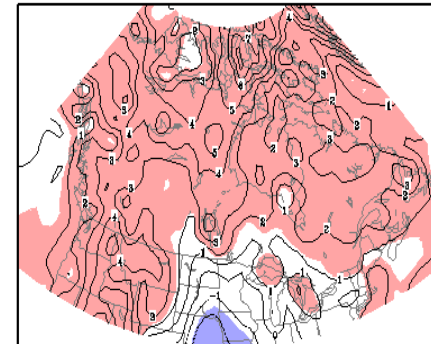
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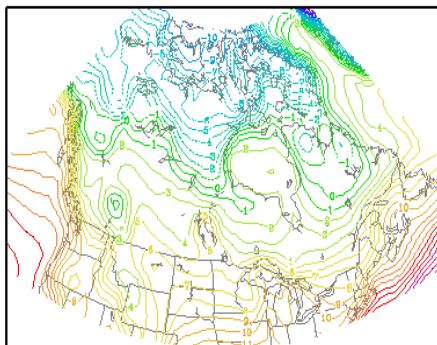
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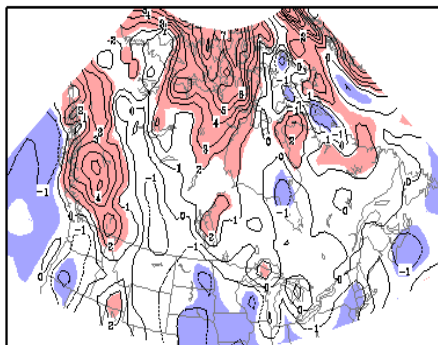
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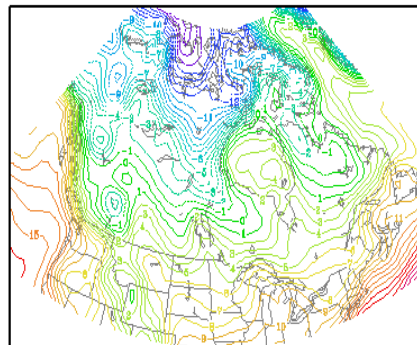
e) 3rd 10-day mean TT



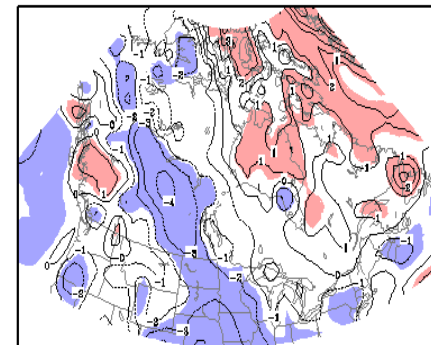
f) 3rd 10-day TT anomaly



e) 3rd 10-day mean TT



f) 3rd 10-day TT anomaly

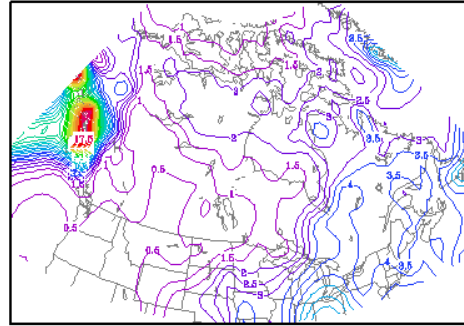


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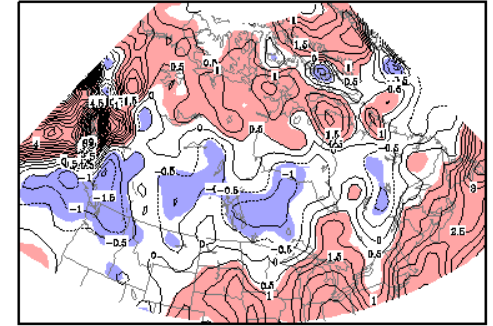
Before bias correction

Precipitation

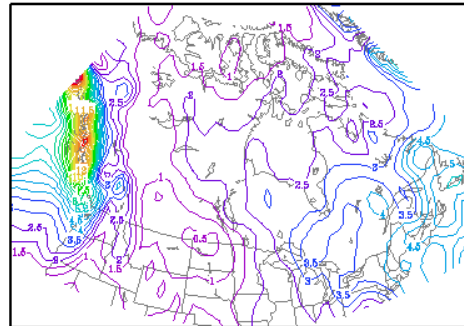
a) 1st 10-day mean PR



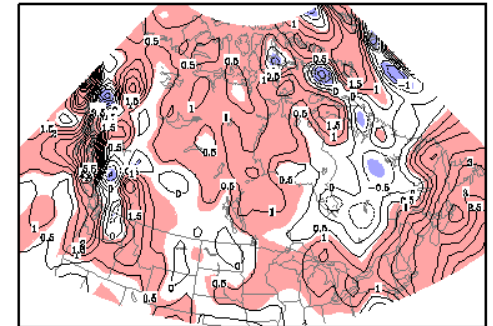
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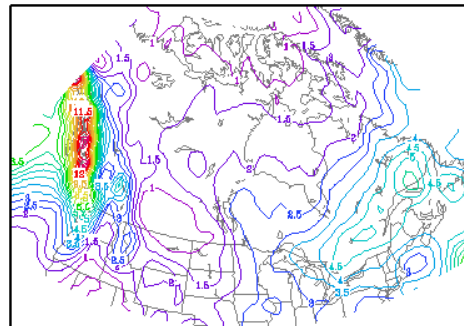
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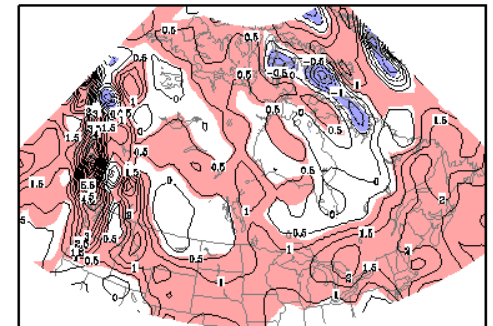
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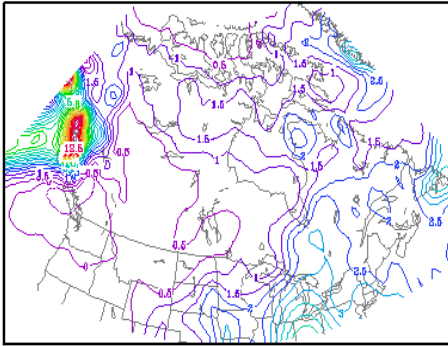
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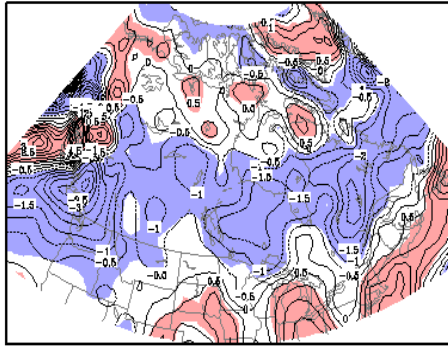
f) 3rd 10-day PR anomaly



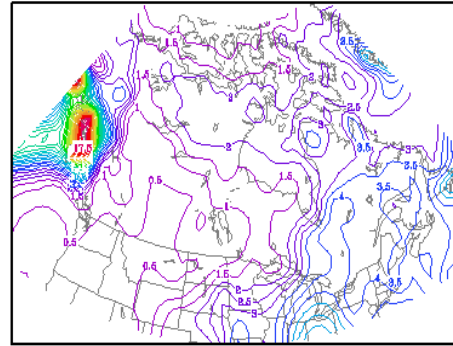
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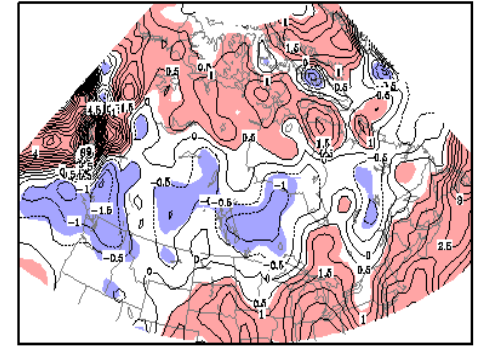
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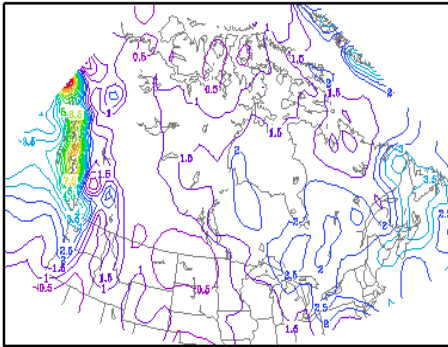
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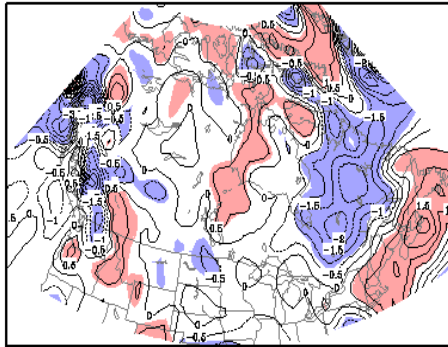
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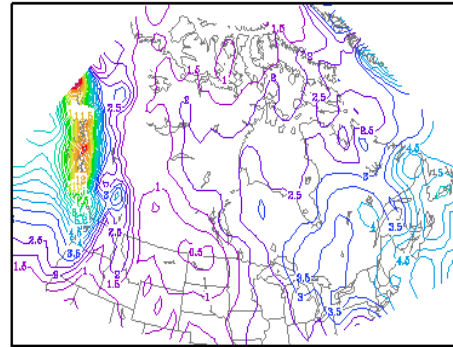
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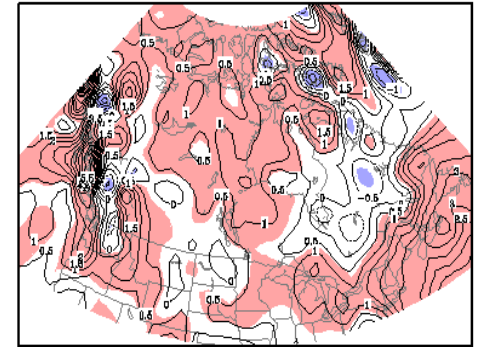
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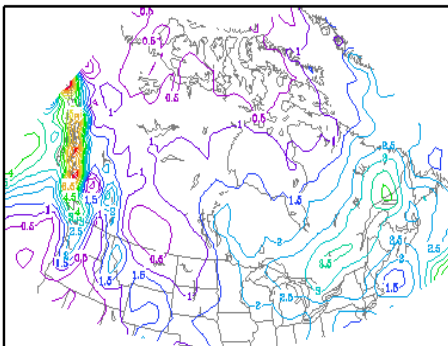
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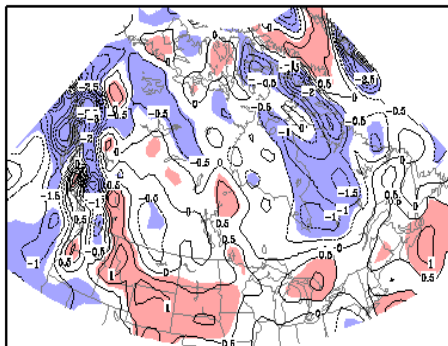
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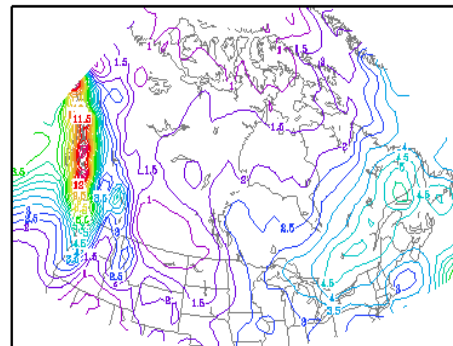
e) 3rd 10-day mean PR



f) 3rd 10-day PR anomaly



e) 3rd 10-day mean PR



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