Post-GAME Planning Workshop
and
Asian Water Cycle Symposium

1 November 2005

2-4 November 205

The University of Tokyo, Japan

The global MM5 for Long Range Weather Forecast in Thailand

Theeranun Raktabutr
Somchai Baimoung
Boonlert Archevarahuprok

Thai Meteorological Department (TMD)

OUTLINE

- Introduction
- TMD Weather Forecast
- TMD LRWF Issues
- global MM5
- Linux Cluster
- Sample Results (Precipitation)
- Conclusion

Introduction

- The medium and long-range weather forecast of Thai Meteorological Department has been conducted at present by means of statistical, analogue, and/or climatology data analysis which based on the monthly and long-range forecasted products that obtained from several other climate prediction centers including ECMWF, IRI, JMA, KMA, NCEP and so on.

Introduction (cont.)

- To improve those forecast, the global MM5 (Fifth-Generation Pennsylvania State University/National Center for Atmospheric Research Mesoscale Model) is the first system that has been adopted for 30 day weather prediction

TMD Weather Forecast

- SRWF

  beyond 12-hours and up to 3-days

- MRWF

  beyond 3-days and up to 7-days

- LRWF

  longer than 7-days ahead

TMD LRWF Issues

- Monthly Weather Outlook

  publish every month before actual weather will be take place

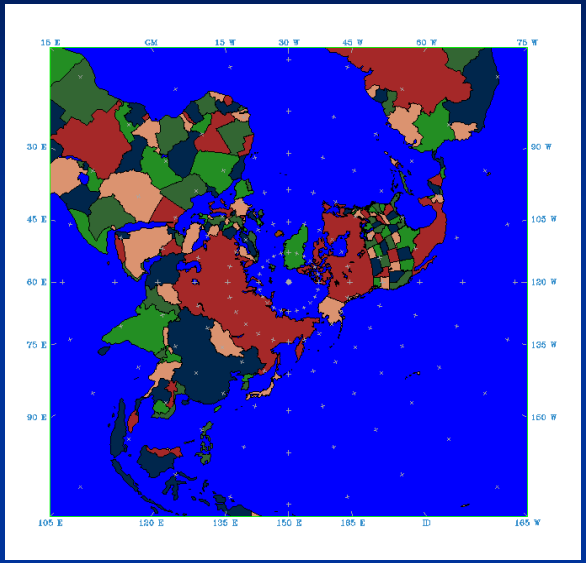
- Seasonal Weather Outlook

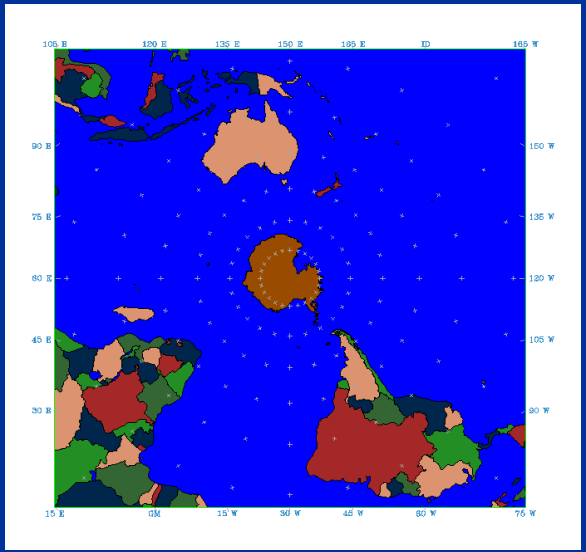
rainy	Apr.	mid-May – mid-October
winter	Sep.	mid-October – mid-February
summer	Jan.	mid-February – mid-May

global MM5

- Two hemispheric domains with polar stereographic projections centered on the north and south poles,
- The domains are joined together at the equator and provide each other with lateral boundary conditions using a simple 4-point interpolation onto the other's grid at every time step.
- with the global initial analysis data at 00 UTC from the National Center for Environmental Prediction Global Forecast System model (GFS)

global MM5 (cont.)



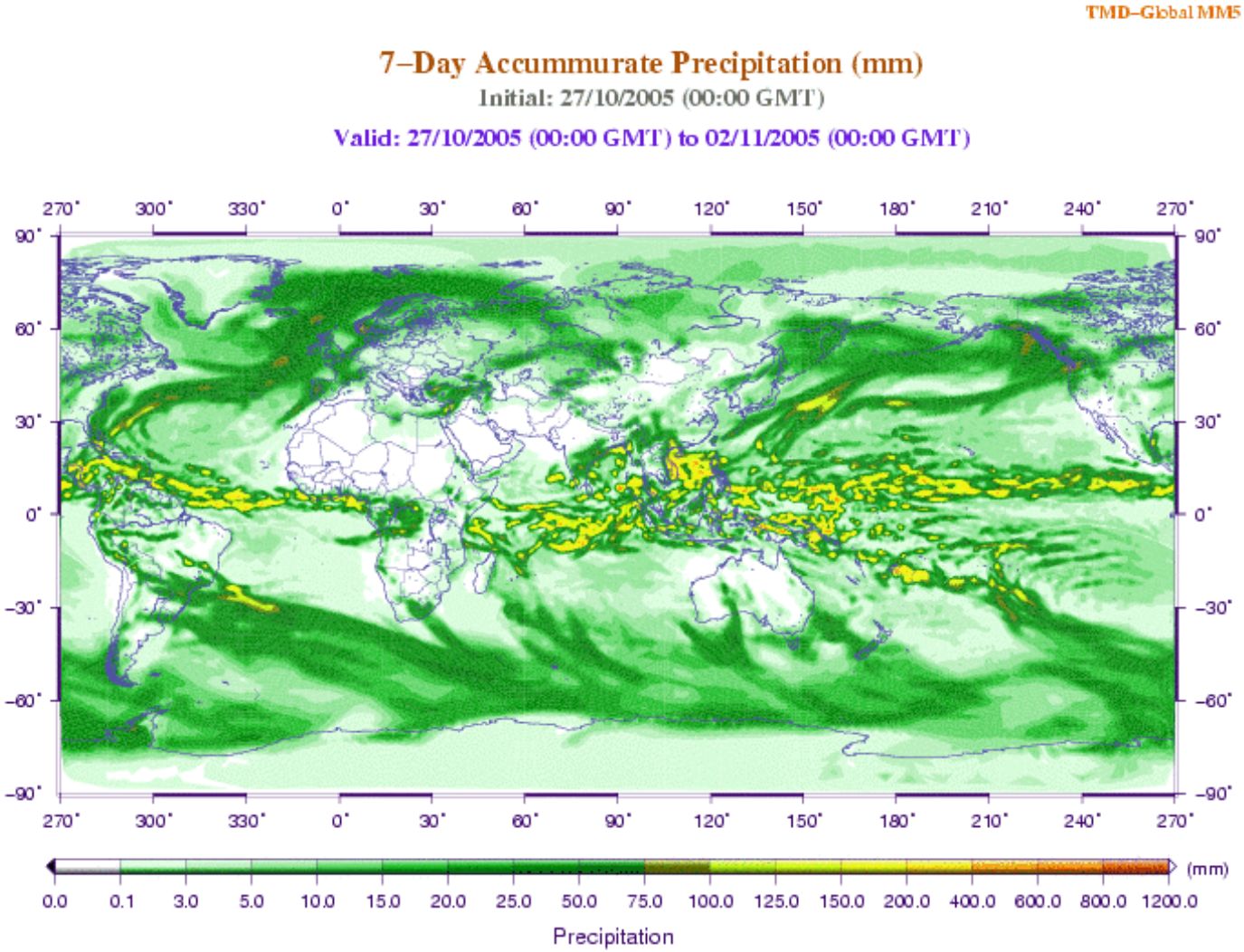


- 210 x 210 grid point
- 23 levels
- 60-120 km. grid distance
- time step 210 seconds
- grell cuumulus
- simple-ice microphysics
- MRF PBL
- cloud radiation
- 5-layer soil temperature

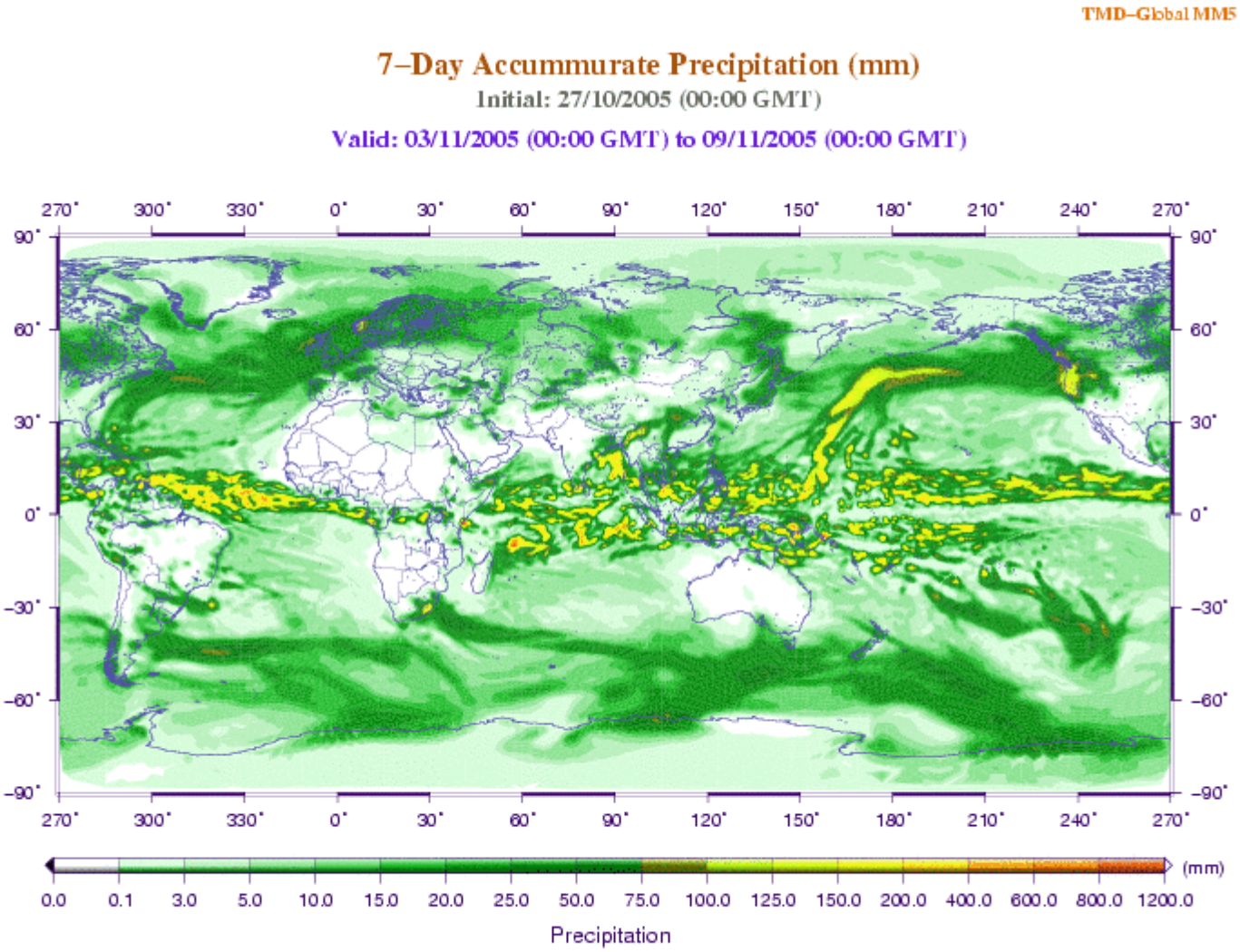
Linux Cluster

- 10-node Linux Cluster
  dual AMD opteron 2.0 GHz
- NCEP Initial data
- 720-hour Prediction
- 11 hours and 10 minutes CPU time
- Vis5D, GrADS, GMT and GIS

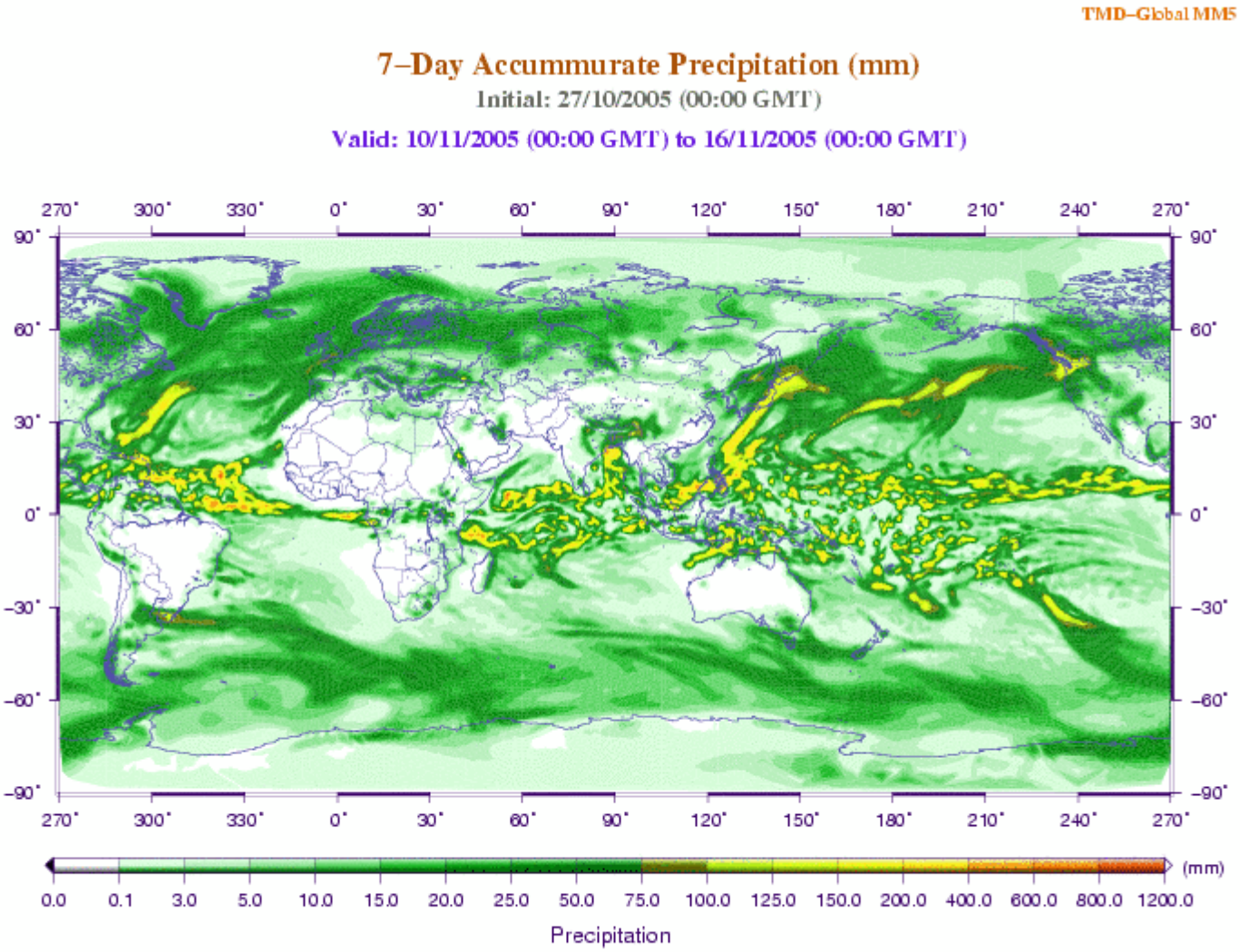
Sample Results (1-7)



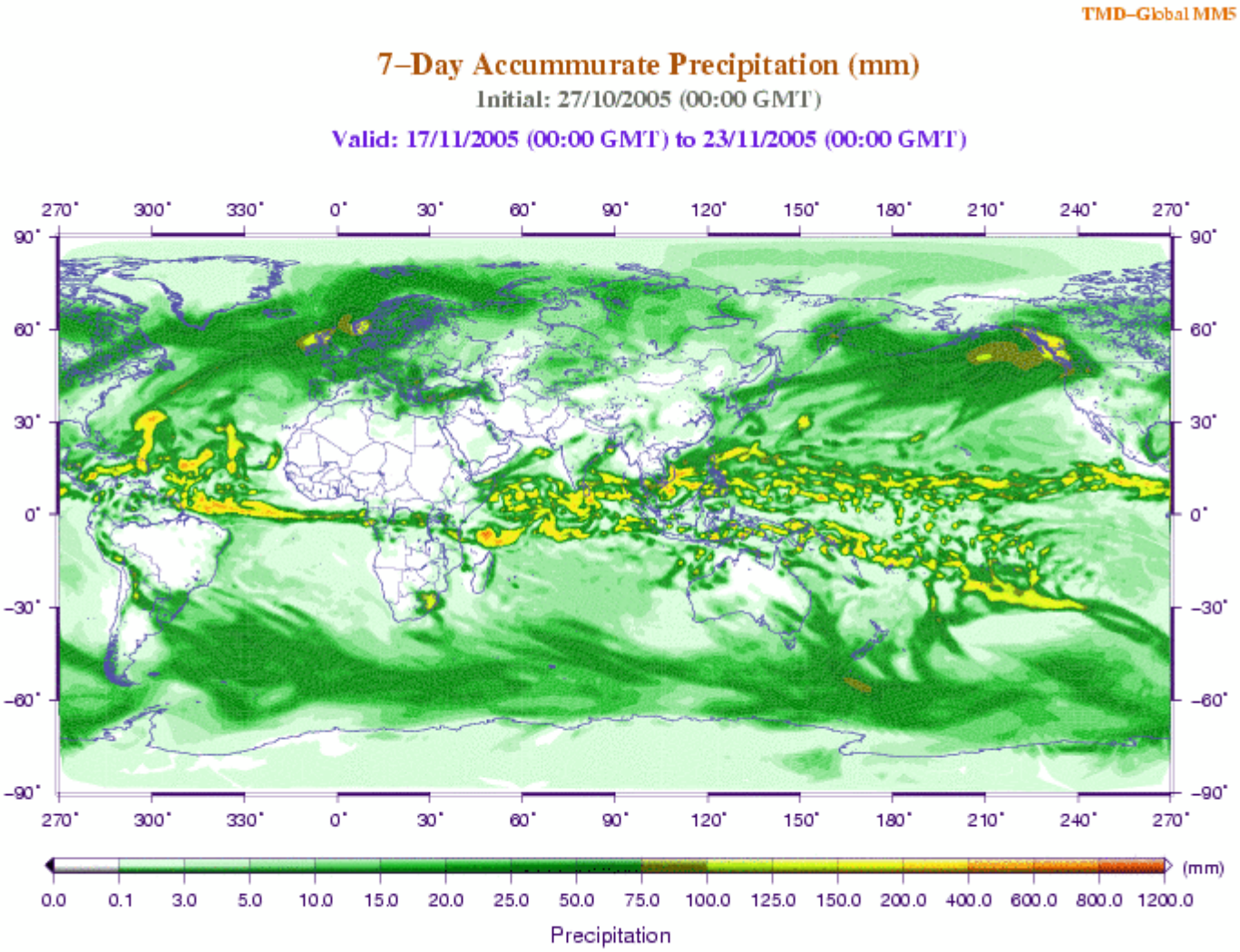
Sample Results (8-14)



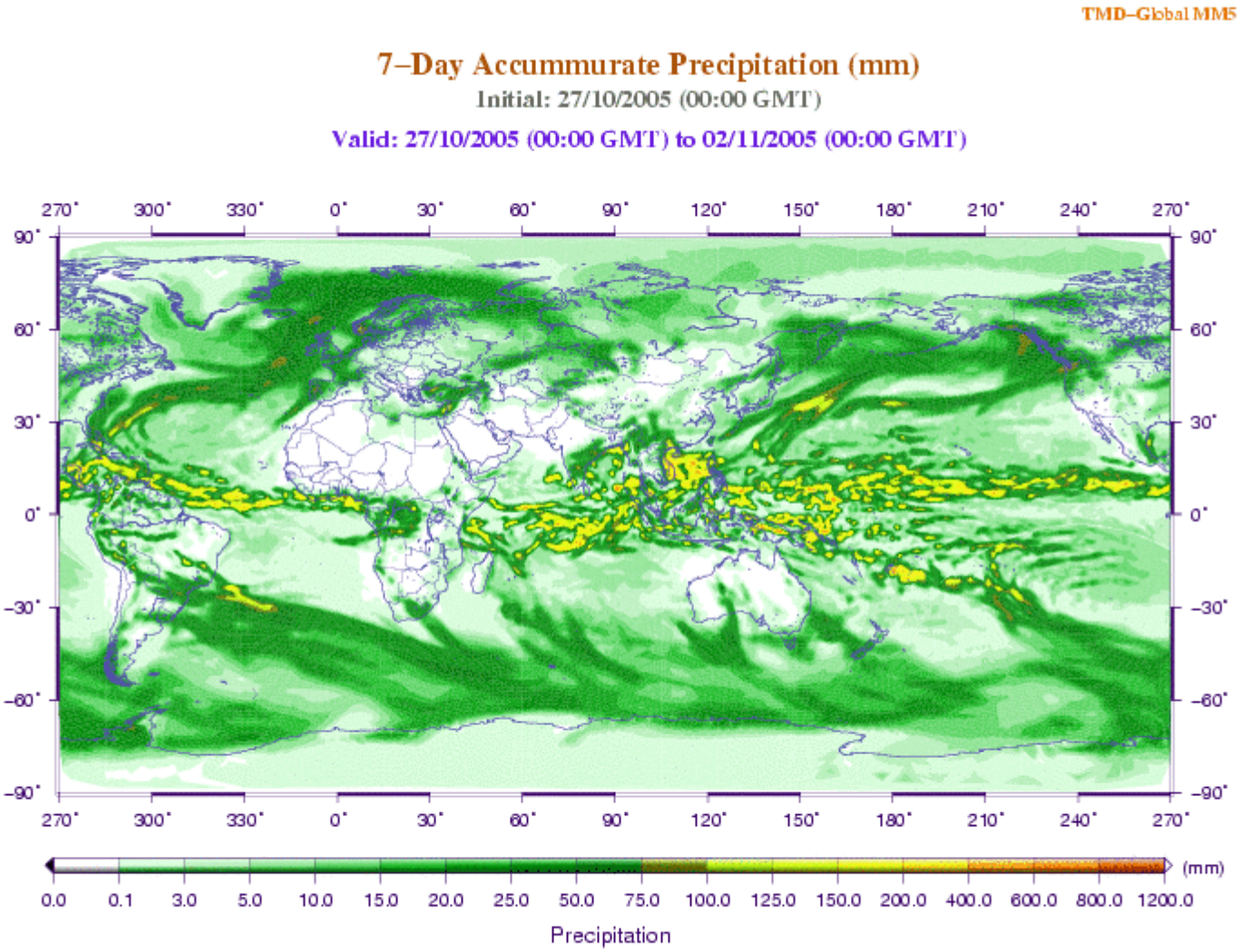
Sample Results (15-21)



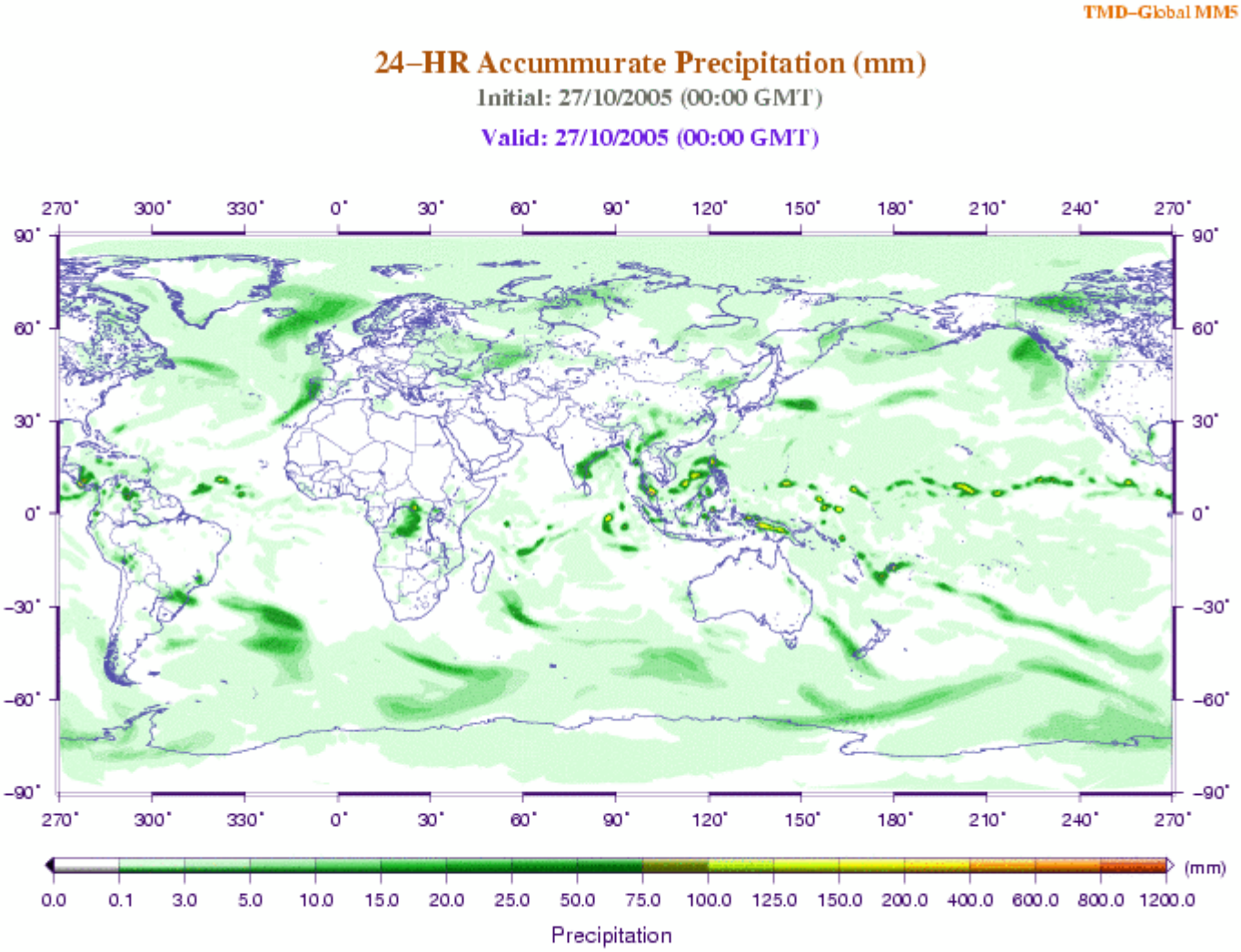
Sample Results (22-28)



Sample Results (Loop 7day)



Sample Results (Loop 24hr)



Conclusion

- The techniques, methodology and process in preparing a LRWF model are being investigated
- The ability of the global MM5 model can be adapted for 30-day LRWF for Thailand
- Future, three month and considered the lower boundary condition and SST.