

Performance of Convection schemes in RegCM4.3 over South Asia CORDEX domain

Group-14

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FOCUS OF THE STUDY

- Test different convection schemes of RegCM4.3 over South Asia CORDEX domain during summer monsoon season.

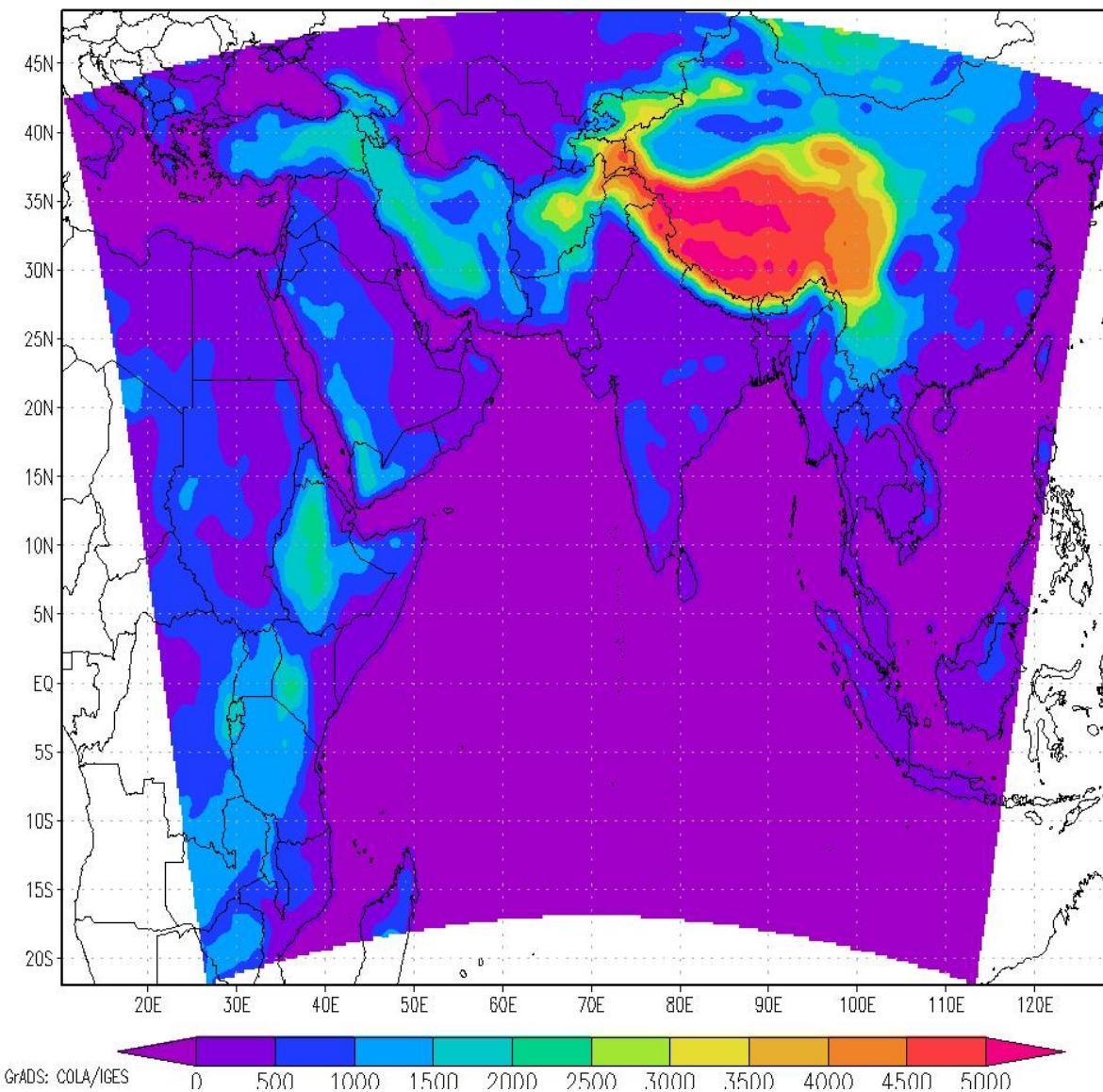
- Model performance in La Nina and El Nino years

- Tests with modified Tiedtke scheme

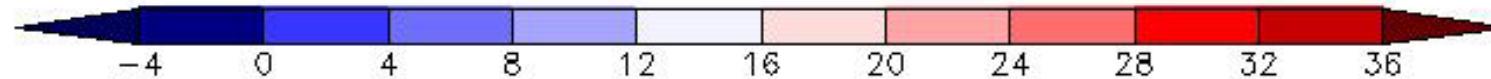
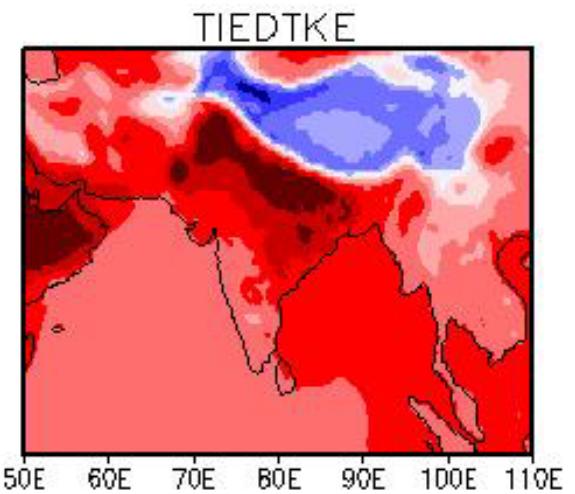
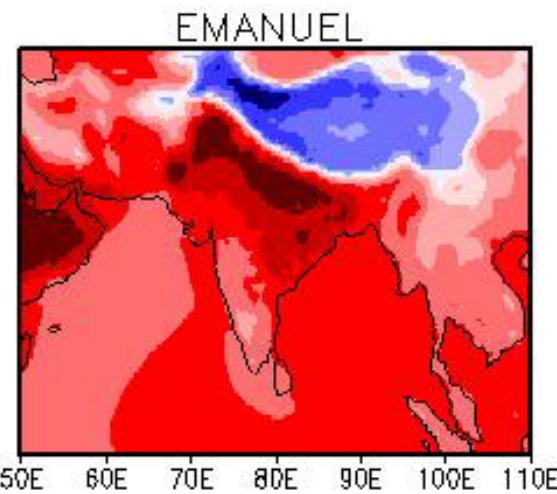
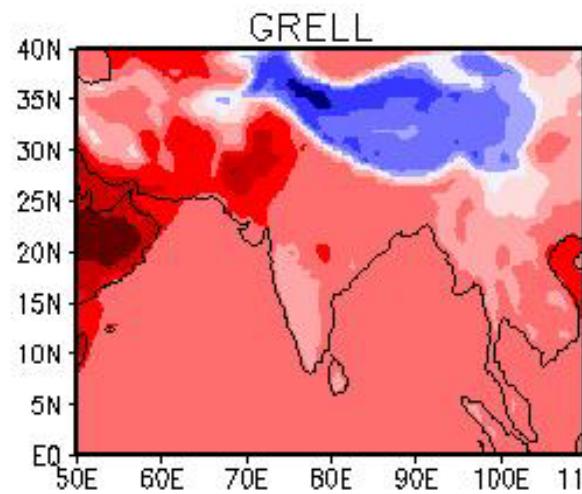
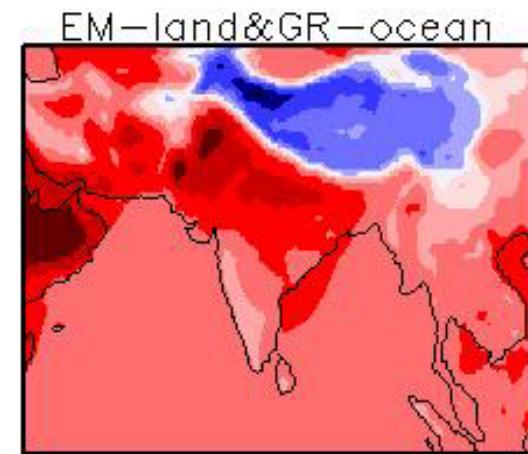
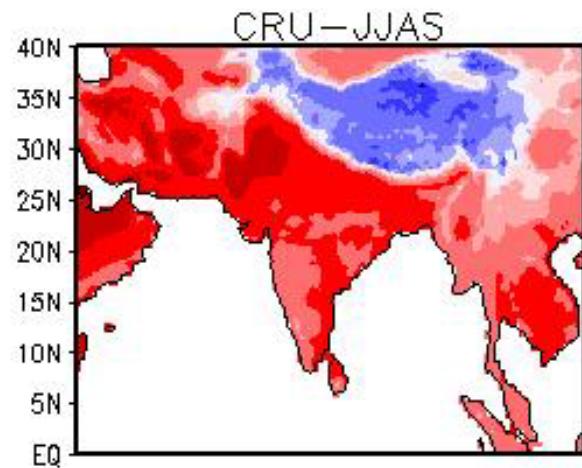
Model Configuration

Dynamics	Hydrostatics
Model domain	South Asia-CORDEX domain
Resolution	50 km
Initial and boundary conditions	ERA15 (MAY 1997-DEC 2004)
SST	OI WK – OISST Weekly Optimal Interpolation dataset
Convective parameterization Schemes	<ol style="list-style-type: none">1. Emanuel over land & Grell over Ocean2. Grell3. Emanuel4. Tiedtke5. Modified Tiedtke (cmtcape=20)
Validation	CRU-Precipitation and Temperature ERA-Interim wind

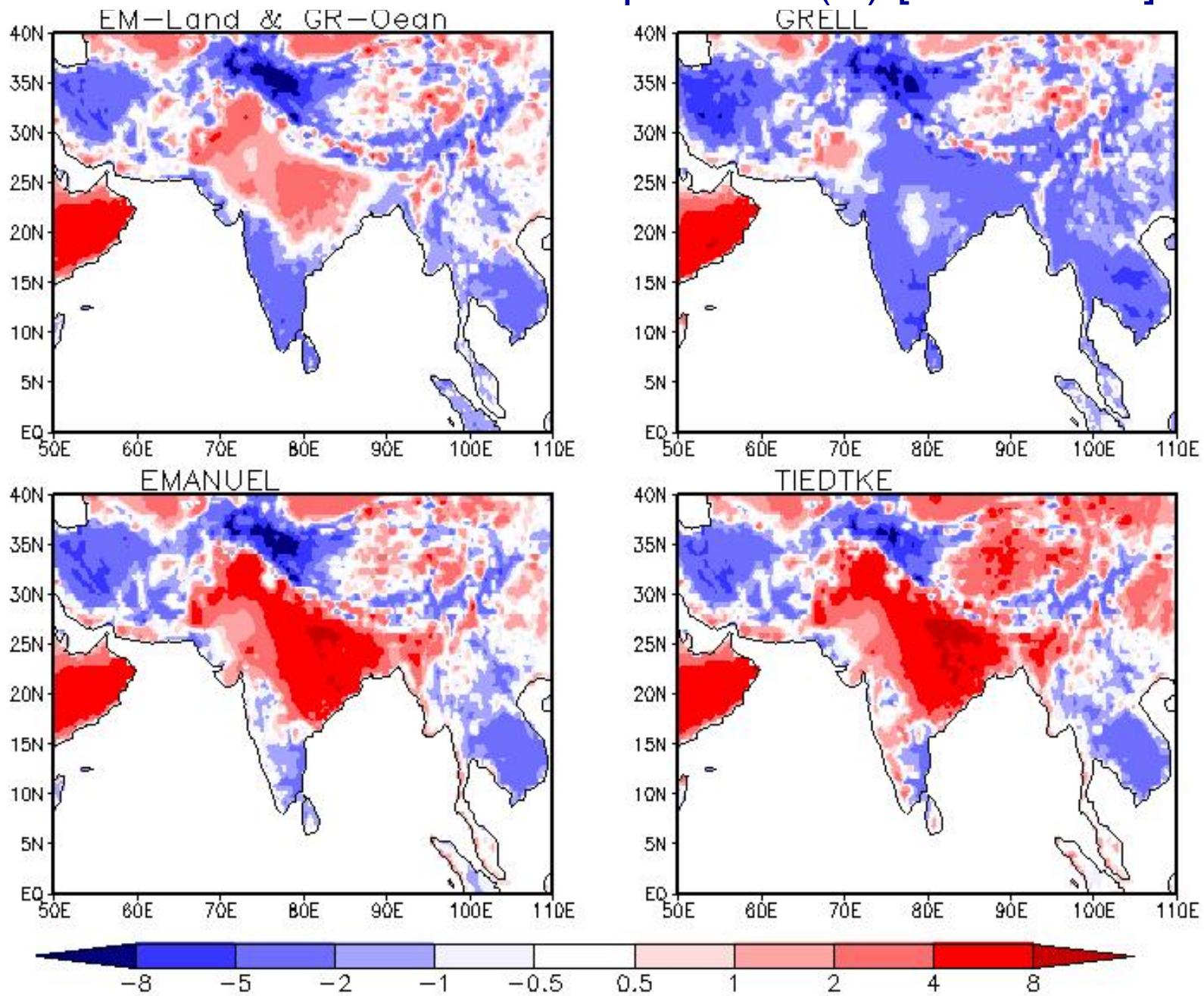
Topography of South Asia CORDEX Domain



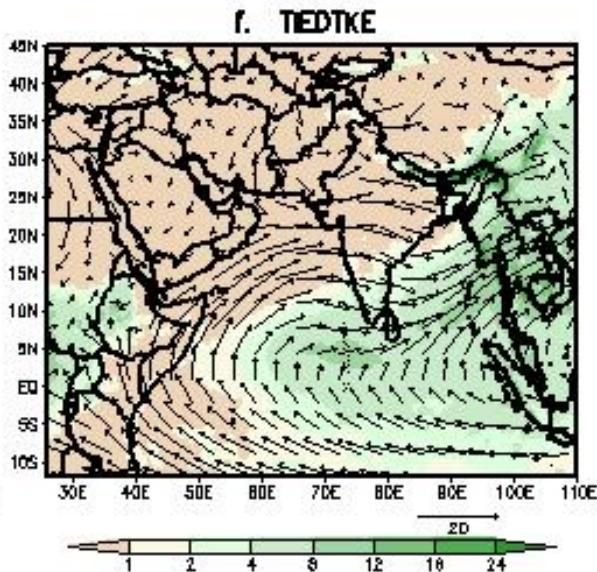
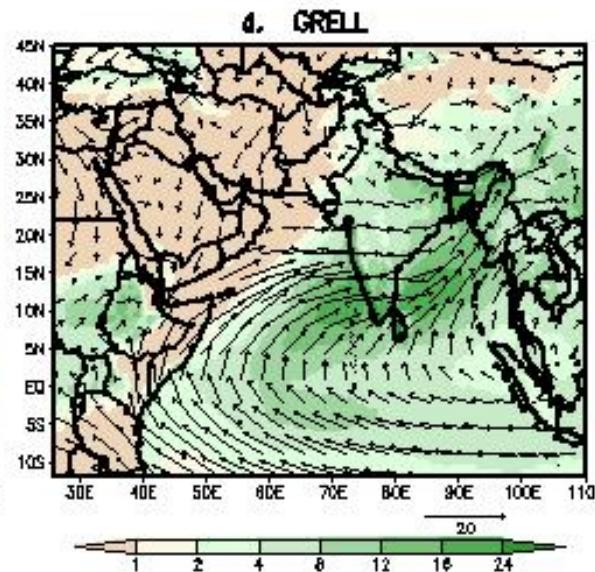
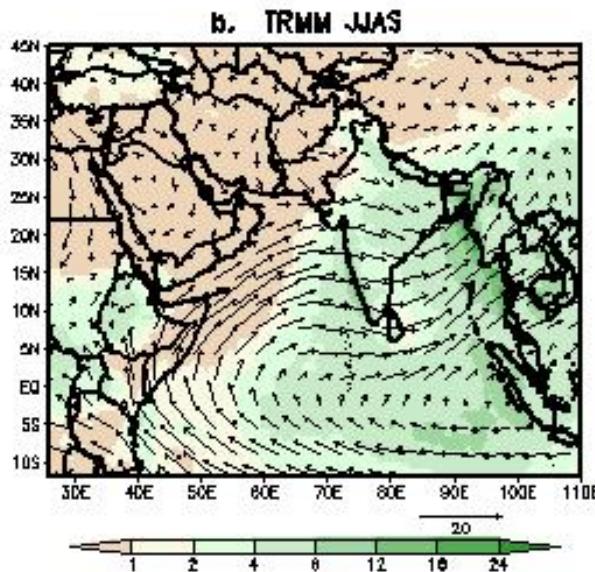
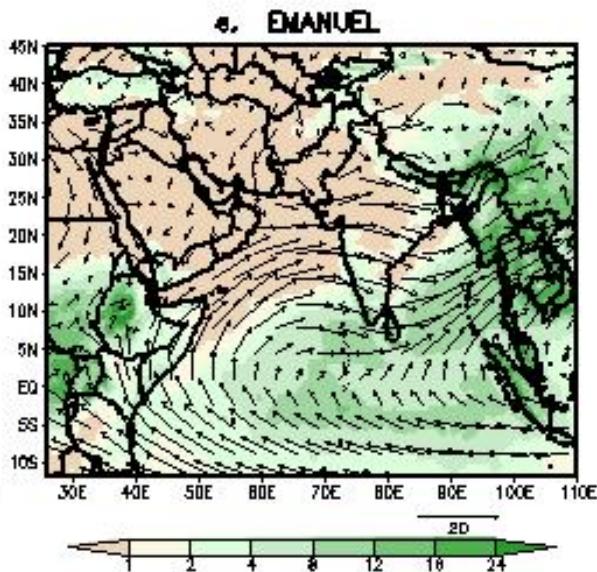
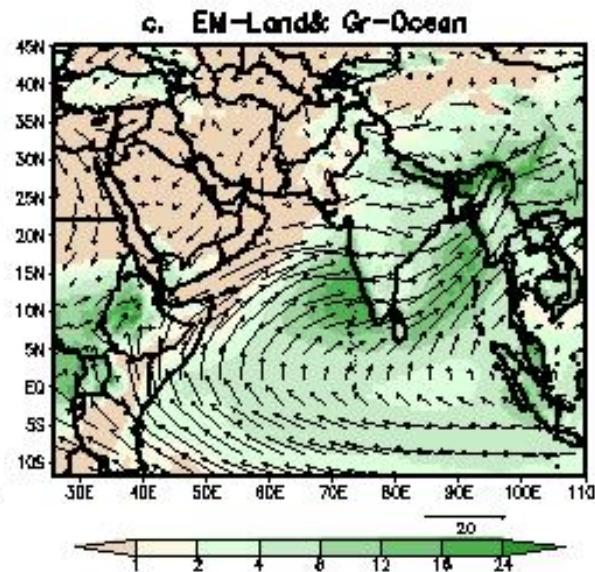
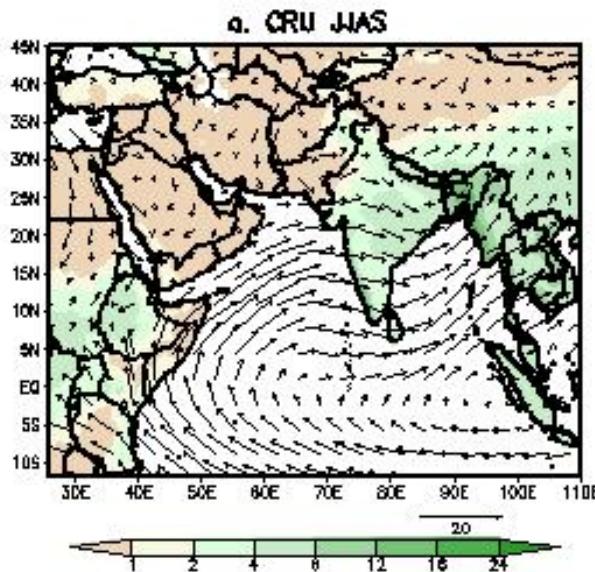
JJAS Mean Temperature (C) [1998-2002]



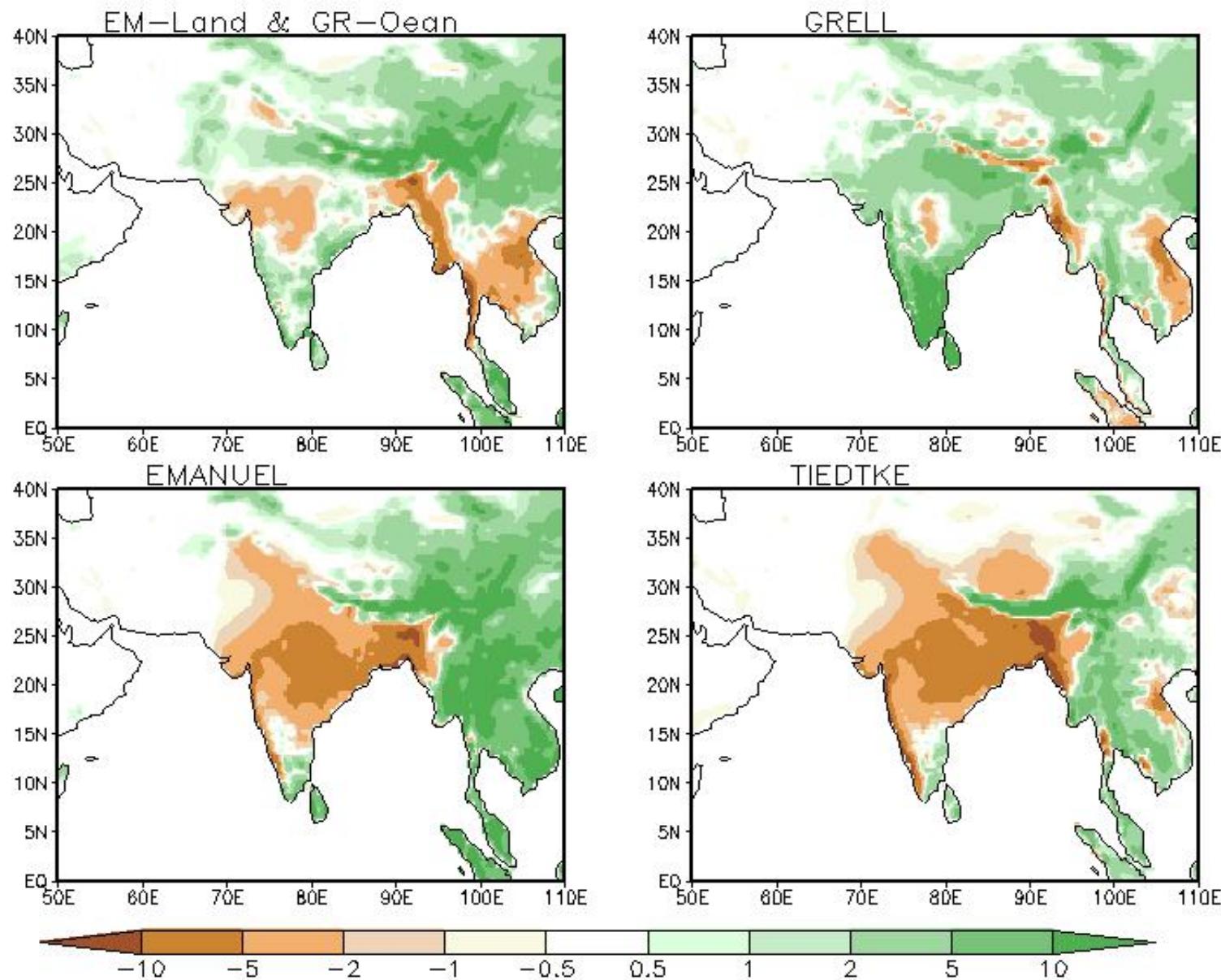
Difference w.r.t. CRU Temperature (C) [1998-2002]

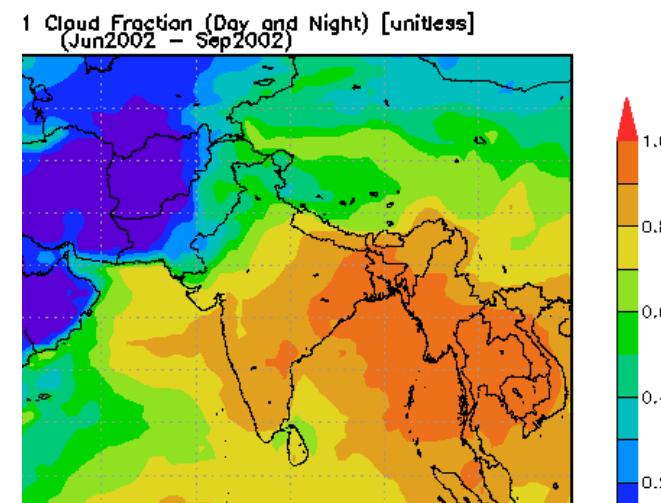
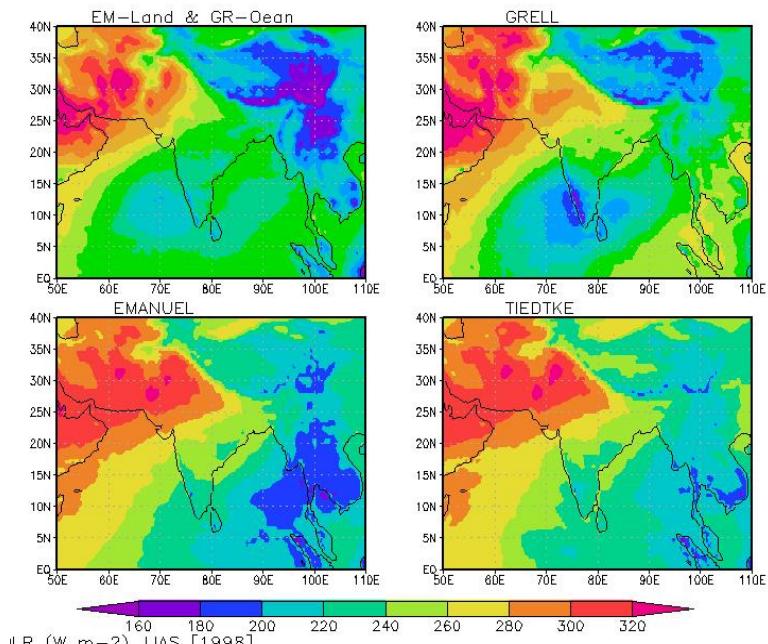


Wind at 850 hPa (m/sec) and Precipitation (mm/day)

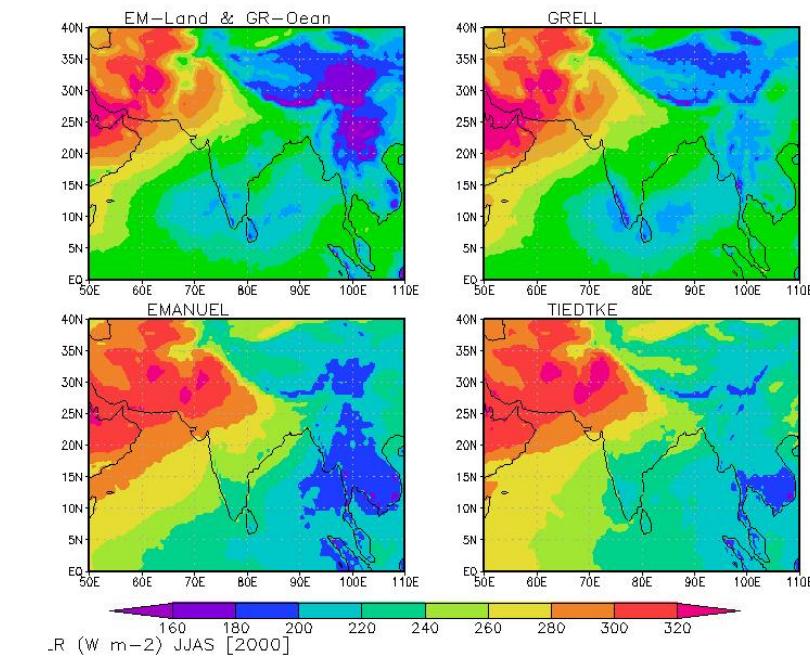


Difference w.r.t. CRU Precipitation (mm/day) [1998-2002]

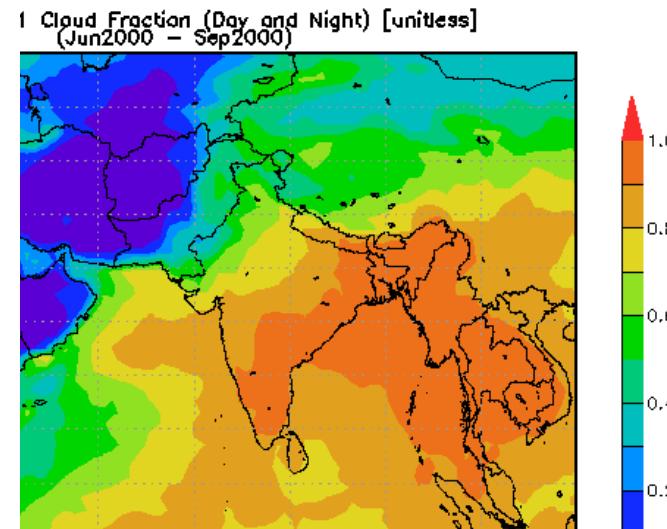




1998 JJAS

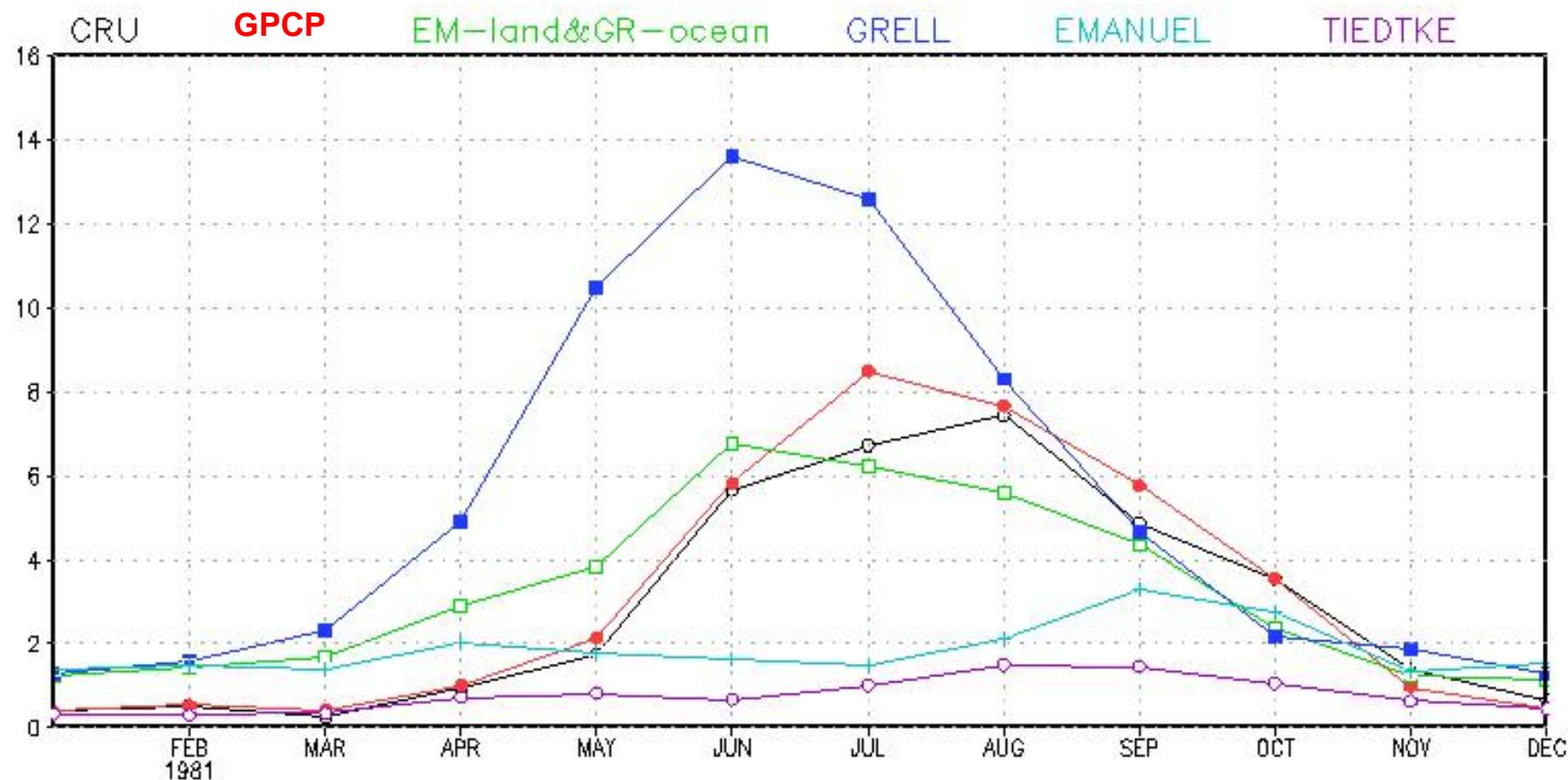


Cloud Fraction

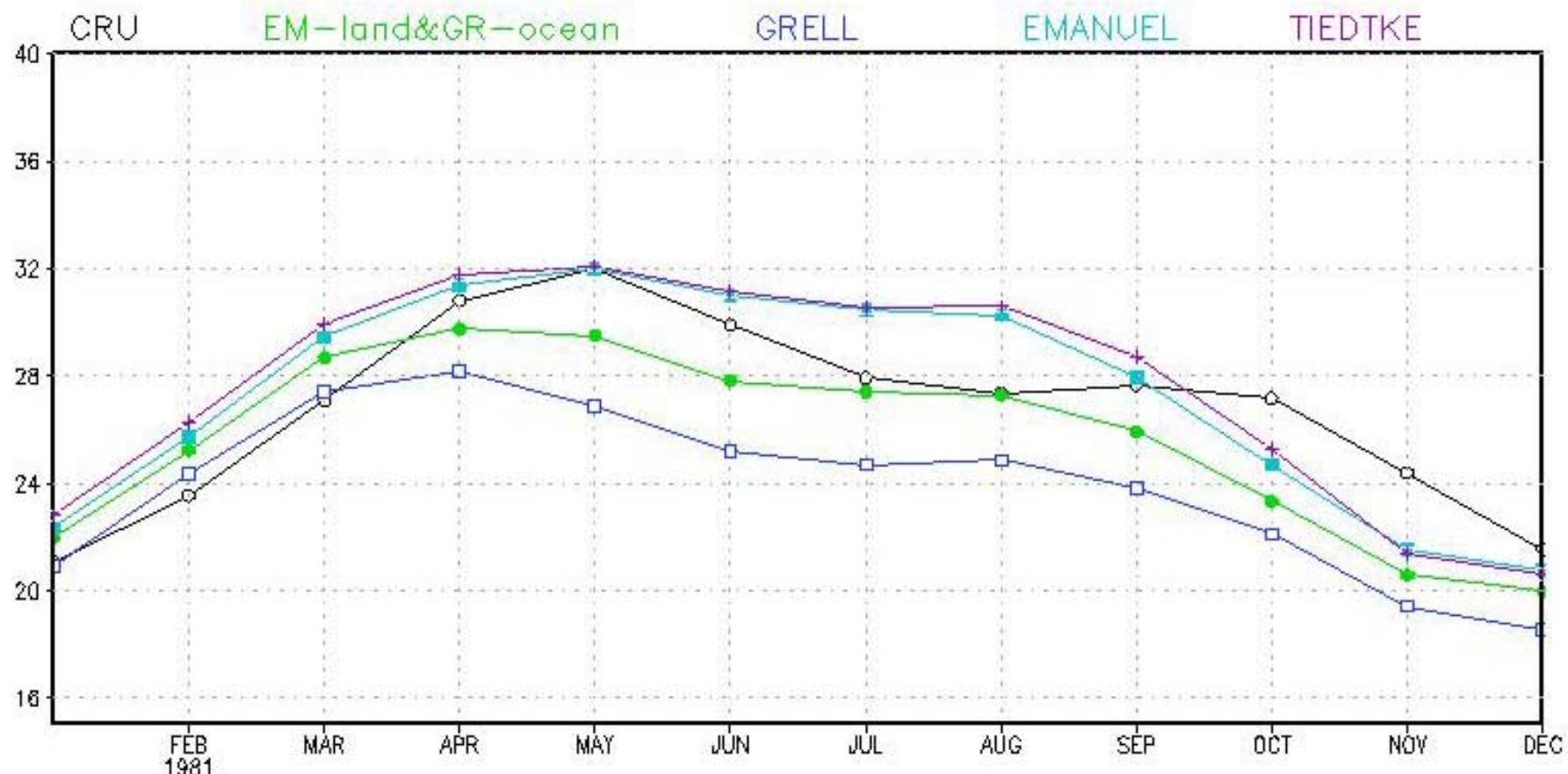


2000 JJAS

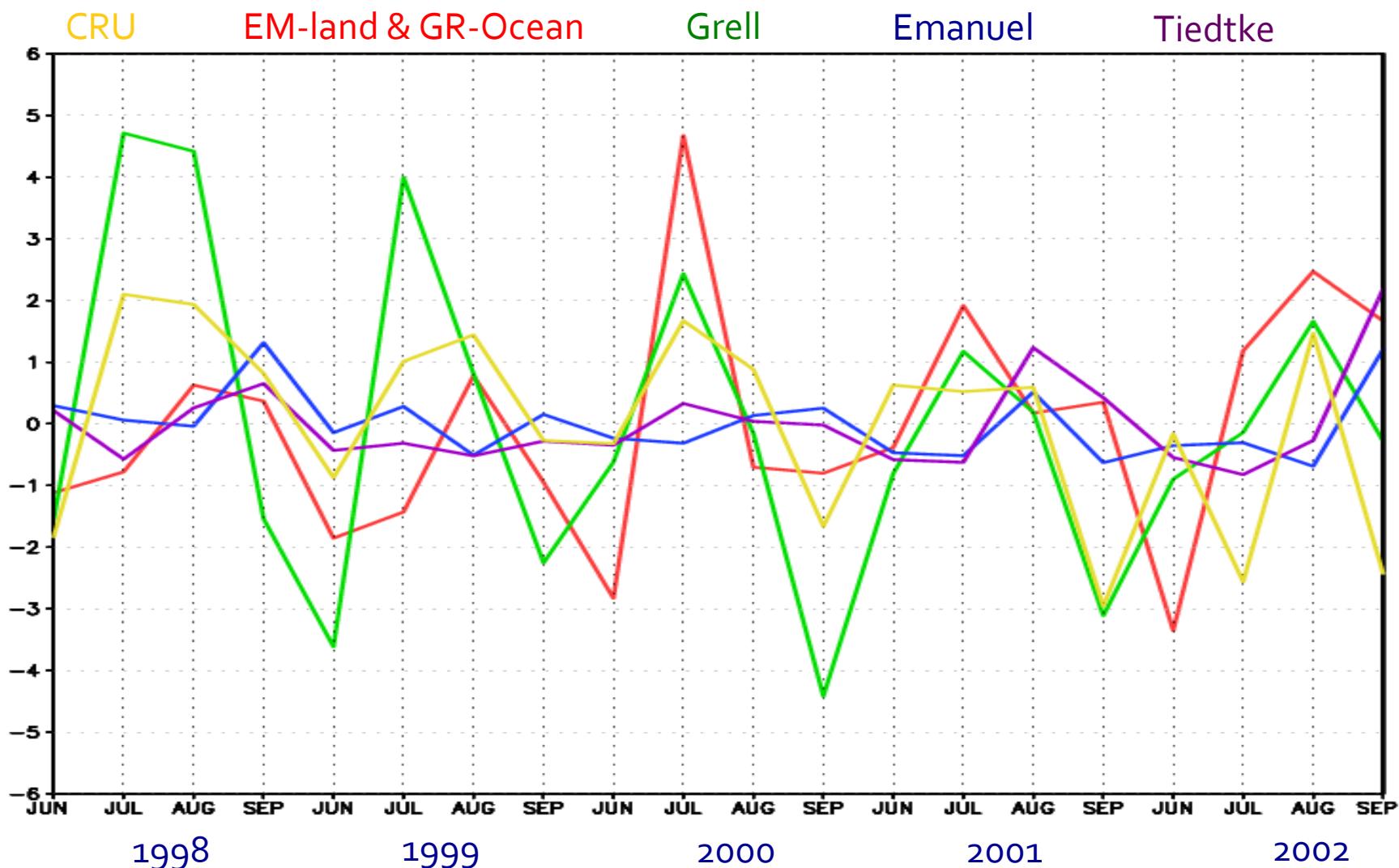
Monthly mean Precipitation (mm/day) Over Indian Region [5-26N;70-90E] only over Land



Monthly mean Temperature (C) Over Indian Region [5-26N;70-90E] only over Land



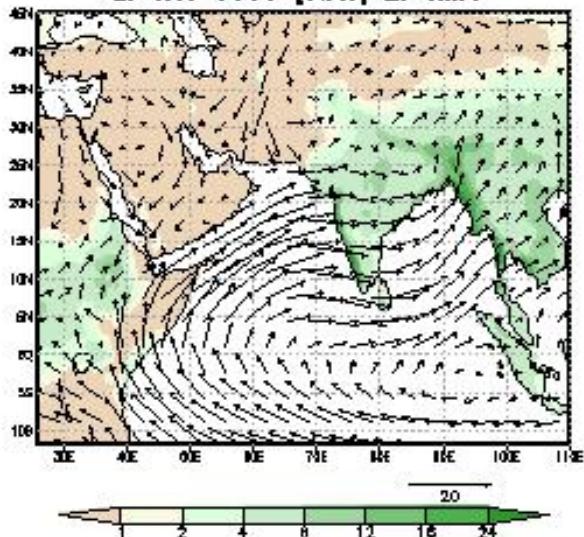
Interannual Variability of Precipitation Over Region [5-26N;70-90E] only over Land



Model performance in La Nina and El Nino year

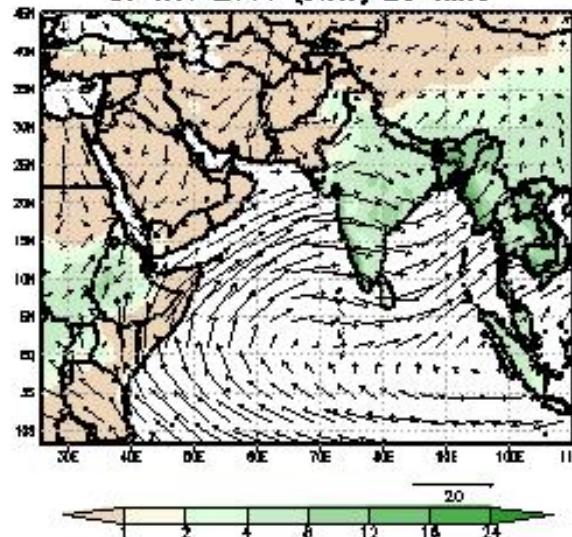
1998 El Nino

a. CRU 1998 (JJAS) El-Nino



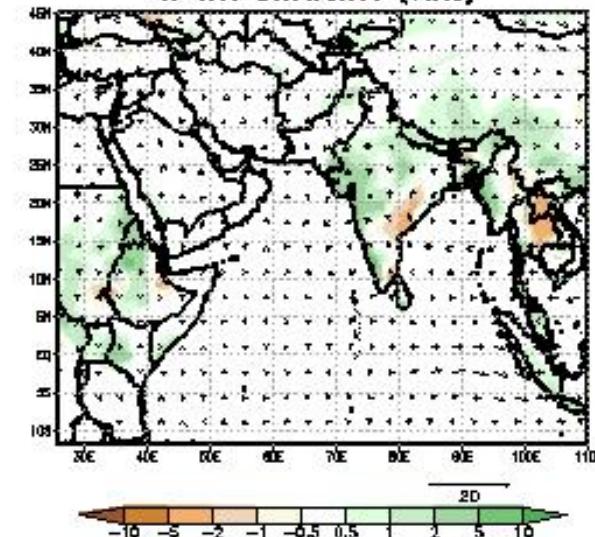
2000 La Niña

b. CRU 2000 (JJAS) La-Nina

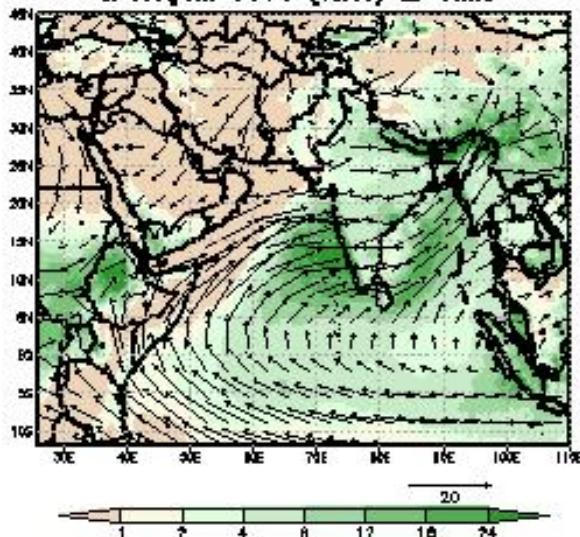


Difference

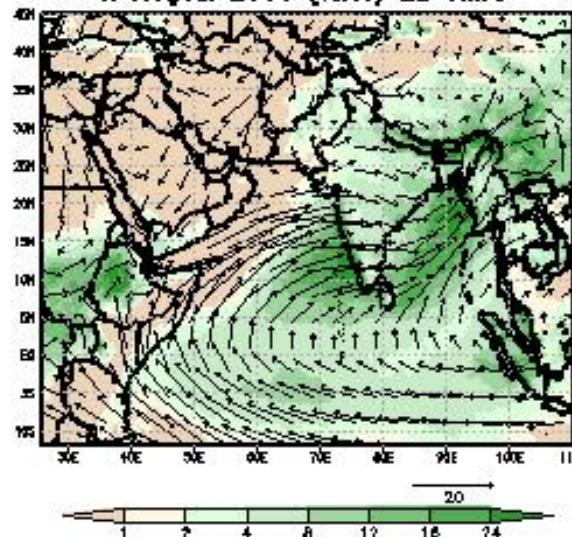
c. CRU Difference (JJAS)



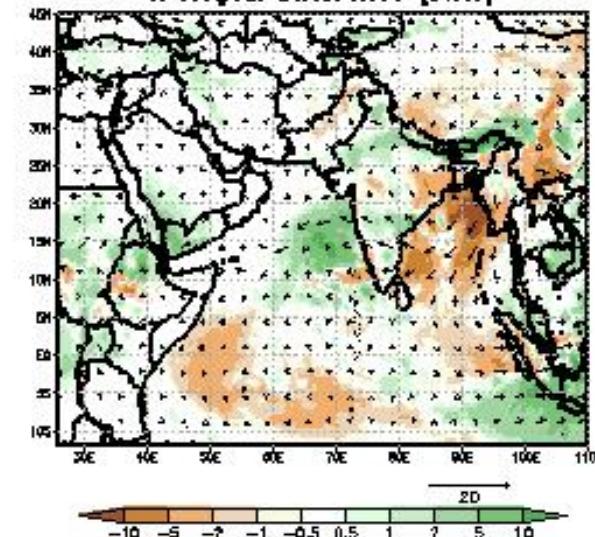
d. RegCM 1998 (JJAS) El-Nino



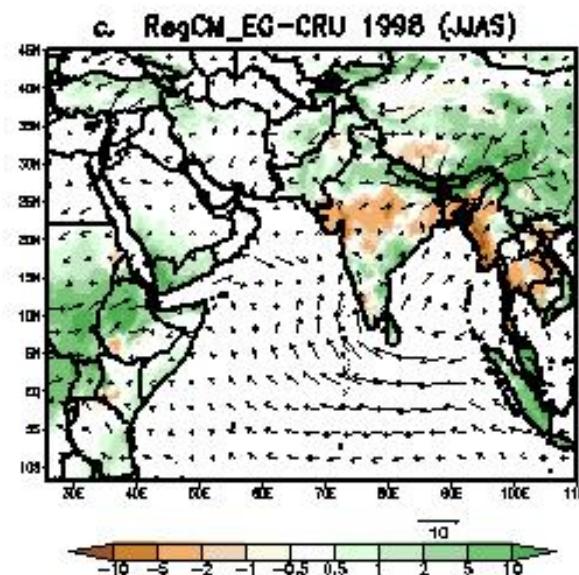
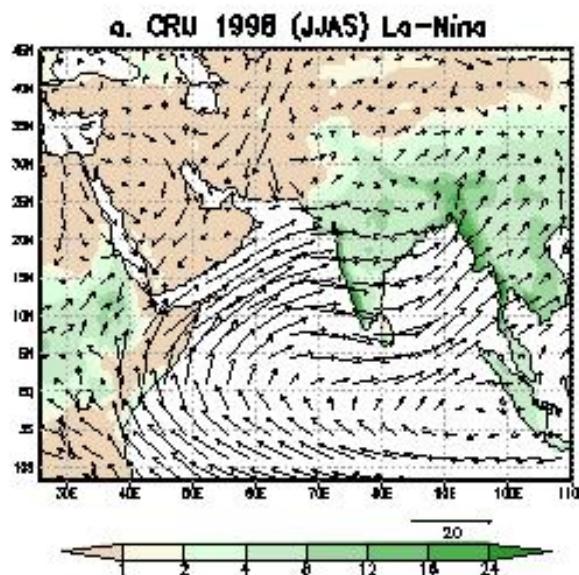
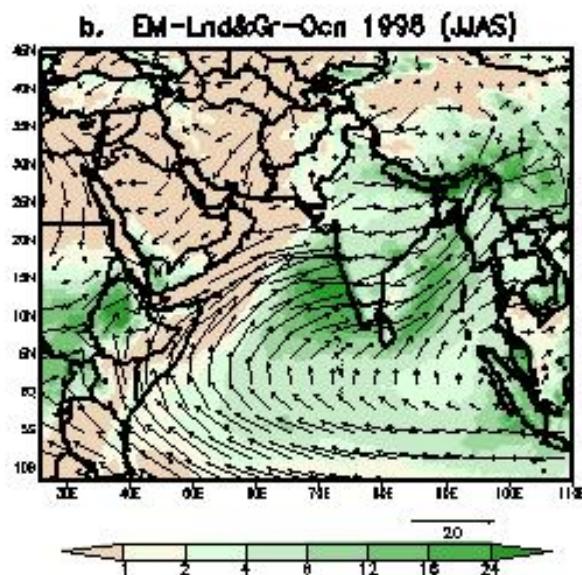
e. RegCM 2000 (JJAS) La-Nina



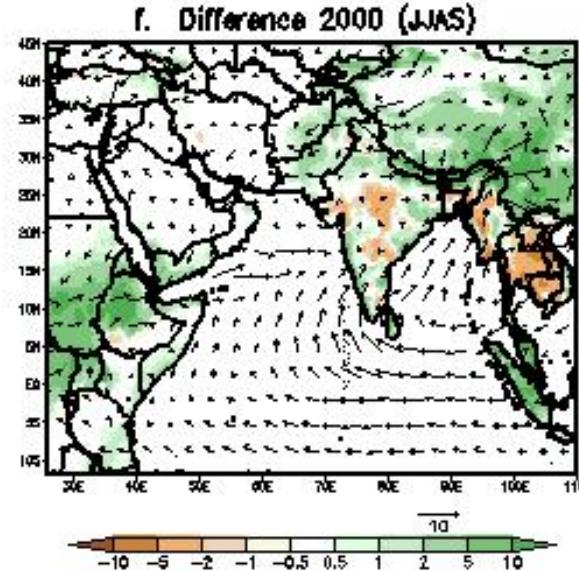
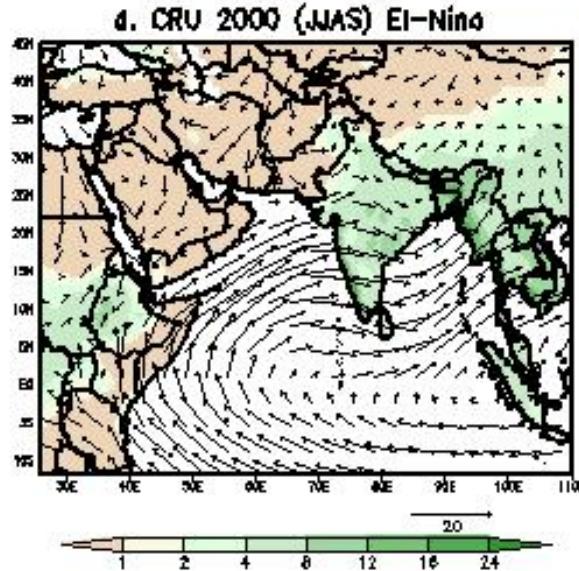
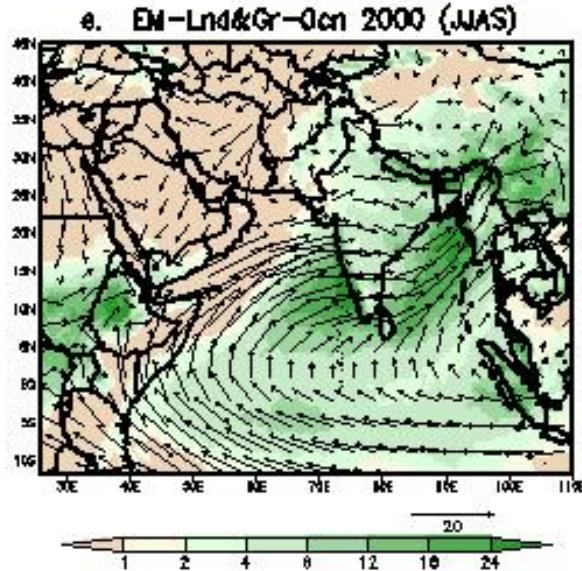
f. RegCM Difference (JJAS)



1998 El Nino Year

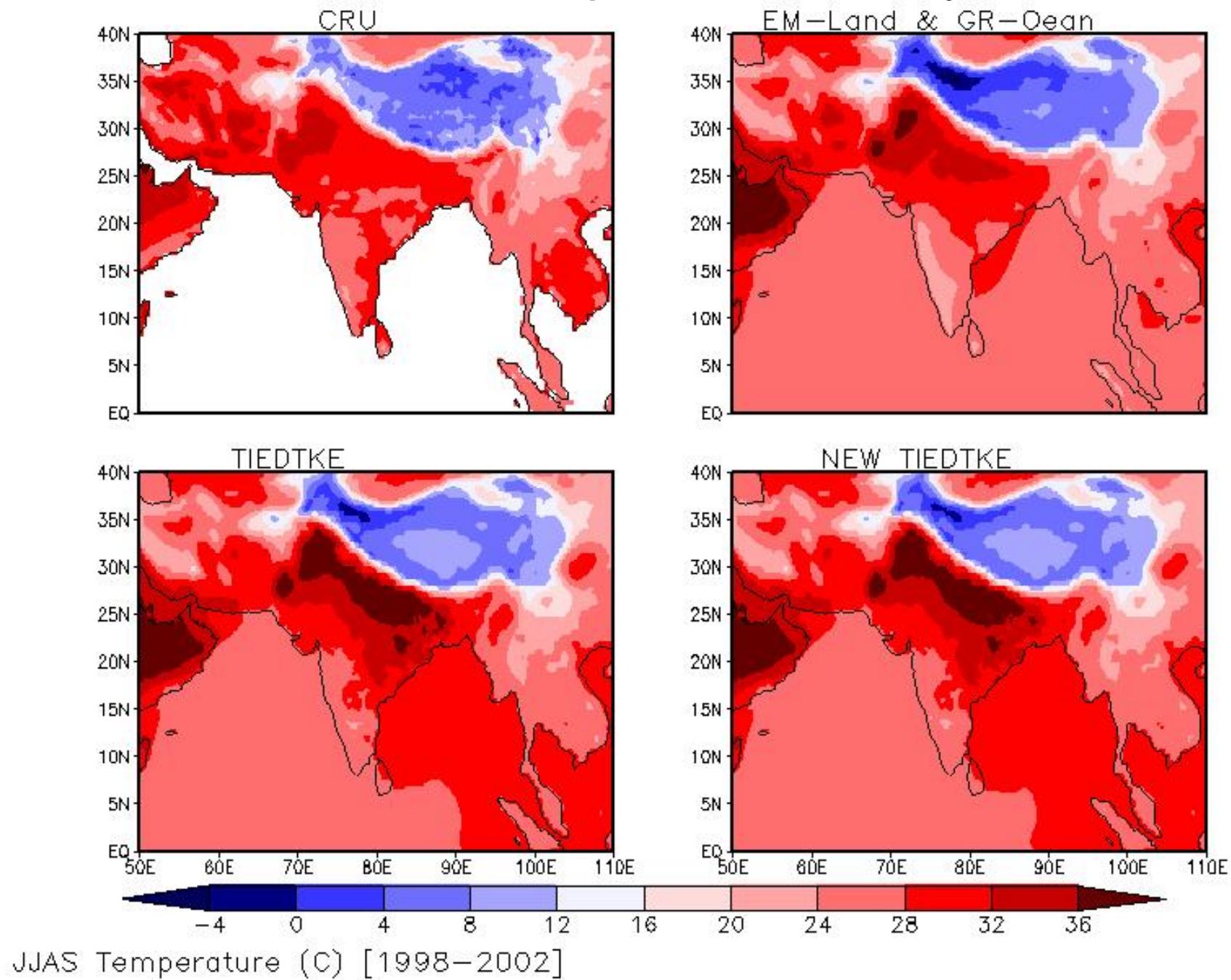


2000 La Niña Year

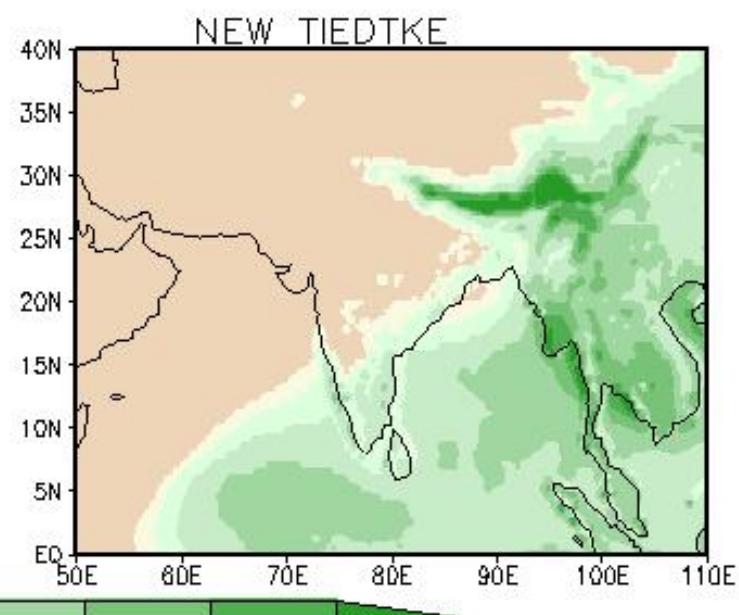
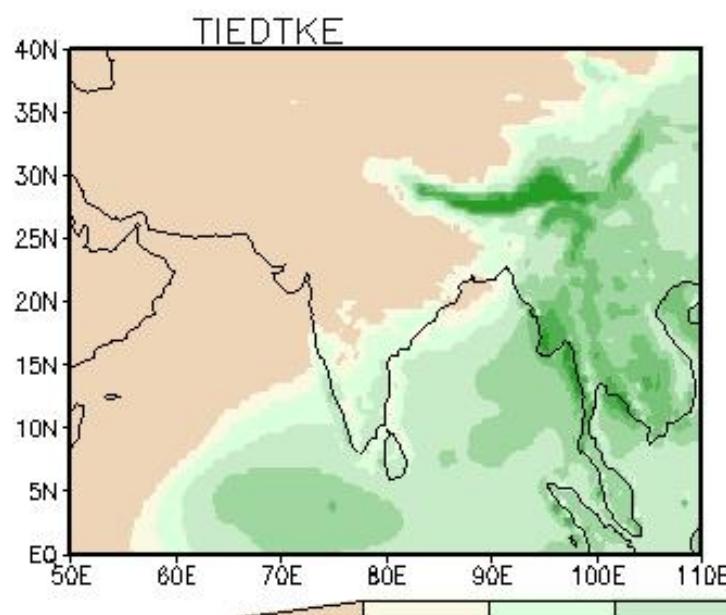
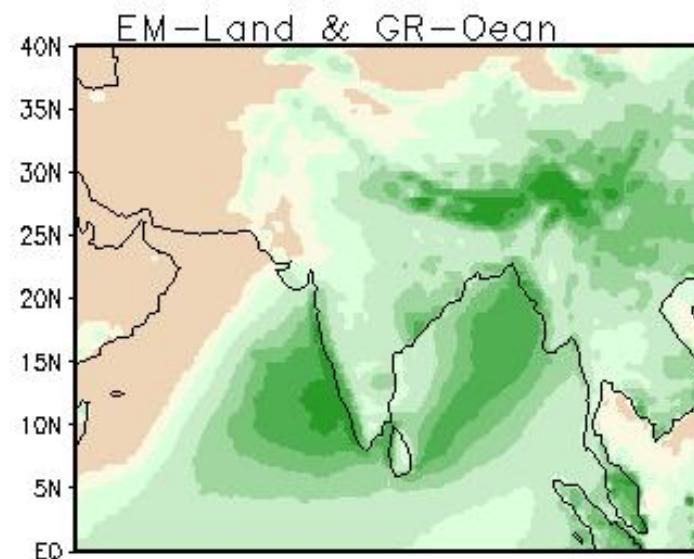
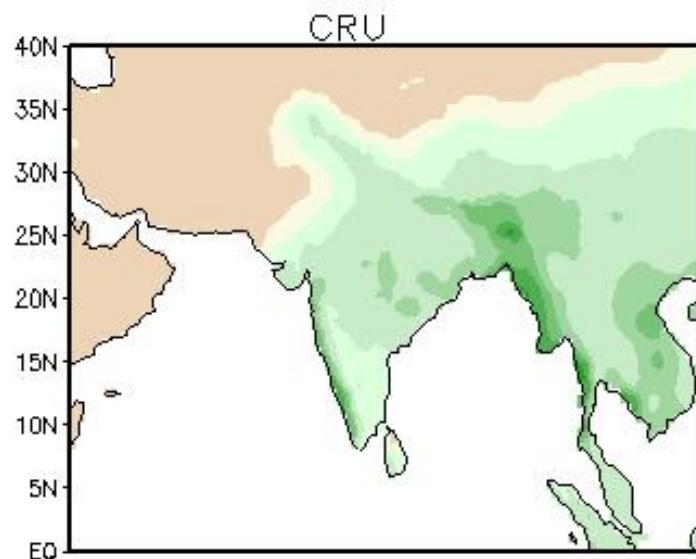


Modified Tiedtke Analysis

JJAS Precipitation mm/day



JJAS Precipitation mm/day



JAS Precipitation (mm/d) [1998–2002]

Conclusions

The model simulate the monsoon feature well in mixed scheme in terms of precipitation, temperature and wind pattern.

The Tiedtke Schemes is over estimate temperature and underestimating precipitation over South Asian domain particularly over Indian region.