CPTEC/INPE products for South America

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PLAN OF TALK
1. EUROBRISA forecasting system
2. WMO Global Producing Center (GPC) CPTEC products
3. Regional model forecast product
4. Daily precipitation monitoring: wet season onset

NOAA-USAID Tenth International Training Workshop (10ITWCVP)
Guayaquil, Ecuador, 9 – 20 July, 2018
EUROBRISA Integrated (empirical-dynamical combined and calibrated) precipitation seasonal forecasting system for South America

Collaborative effort:
INPE/CPTEC, Univ. Exeter, ECMWF, UK Met Office, Météo-France, UFPR, USP and INMET

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http://eurobrisa.cptec.inpe.br

Key Idea: To improve seasonal forecasts in S. America a region where there is seasonal forecast skill and useful value
Seasonal forecast availability

- Empirical/statistical models
- Dynamical coupled (ocean-atmosphere) models

EUROBRISIA conception

Why not combine all available state-of-the-art forecast information from both sources (empirical and dynamical)?

EUROBRISIA Integrated (combined and calibrated) precipitation seasonal forecasting system for South America

http://eurobrisa.cptec.inpe.br
Empirical (based on Jan 2016 SST) and integrated forecasts indicated pronounced deficit over NE Brazil
Current EUROBRISA integrated forecasting system for South America

→ Combined and calibrated coupled + empirical precip. forecasts
→ Hybrid multi-model probabilistic system

**Couple model**
- ECMWF Sys 5 ← NEW International
- UKMO GloSea5 GC2 U.K.
- Meteo-France Sys 5 France

Updated empirical model ← NEW
Predictors: Atlantic and Pacific SST
Predictand: Precipitation
Coelho et al. (2006) J. Climate, 19, 3704-3721

Hindcast period: 1981-2015

Produced with forecast assimilation

Updated in Mar 2018
EUROBRISA integrated fcst for JAS 2018
Issued in Jun 2018: Most recent forecast

Obs. SST anomaly May 2018

Prob. of most likely precipitation tercile (%)
New version of EUROBRISA system updated Mar 2018

Hybrid (empirical-dynamical) multi-model ensemble system for South America

Real-time forecast and verification products
New version of EUROBRISA

EUROSIP: ECMWF (System 5) (NEW)
UKMO (GloSea 5 GC2)
Meteo-France (System 5)
Empirical (SST based) (NEW)
Integrated (Combination of 4 models above)

1-month lead forecasts

Real-time forecast and verification products

Hybrid (empirical-dynamical) multi-model ensemble system for South America

http://eurobrisa.cptec.inpe.br
ANOMALY PRECIPITATION (mm/day) - kuo
AUG2018 SEP2018 OCT2018
WMO Global Producing Center (GPC) CPTEC products

CPTEC: Prob. most likely precip. tercile (%)  
Issued: Jul 2018  Valid for ASO 2018  
Region: South America

http://clima1.cptec.inpe.br/gpc/pt
WMO Global Producing Center (GPC) CPTEC products

Correlation between forecast and obs. anomaly
Issued: Jul Valid for ASO
Region: South America

http://clima1.cptec.inpe.br/gpc/pt
Regional model forecast product

Modelo Eta – 40km
PREC ANOM FCT season
ASO/2018

http://clima1.cptec.inpe.br/gpc/pt
Daily rainfall monitoring

Data source: CPTEC/INPE, INMET and regional meteorological centers
http://clima1.cptec.inpe.br/estacaochuvosa/pt
Daily rainfall monitoring during the wet season

http://clima1.cptec.inpe.br/estacaochuvosa/pt
When does the wet season typically start?