Schweizerische Eidgenossenschaft
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Swiss Confederation

Federal Department of Home Affairs FDHA
Federal Office of Meteorology and Climatology MeteoSwiss

„THE_Score“ for COSMO

COSMO-meeting, Zurich 20 August 2007

Verification for monitoring performance

- Requested by administrators and bosses
- Must be easy to understand
- Small number of scores

from Beth Ebert, BMRC

Agenda of the Meeting (1)

10:30h start of the meeting (after arrival of Adriano and Uli)

10:45h presentation of the MOVI-concept by Thomas Egli

11:00h start of discussions with:

- proposals of Uli, Adriano, Francis/Pirmin
- definition of the parameters and statistical measures to be included in the score
- choice of stations
- definition of rules (station/gridpoint selection: algorithm proposed by Pirmin)
- list of selected stations (proposition of Adriano: EUCOS stations)

12:45h lunch

Agenda of the Meeting (2)

13:30h demonstration of the actual state of the implementation of MOVI by Susanne Huber

13:45h second part of the workshop:

- follow-up of morning work
- presentation at the GM in Athens (WG5 Adriano)
- writing of the technical and scientific part of the doc: after GM
- common implementation inside COSMO: in CVS
  lead: new WP in WG5 for 2008. Testphase in 2008 and first results at COSMO GM 2008

16:00h closure of the meeting

Parameters

- total cloud amount [threshold: 0-2, 3-6, 7-8 (perhaps: middle class 3-5 depending on frequency distribution)
- temperature [t2m, later: tmin, tmax]
- 10m- windvector
- precipitation [thresholds: 0.2, 2, 10 mm/6h]

Verification frequency

- All 3h
  - T2m, 10m-wind and cloudiness:
    - @ 00, 03,…, 18, 21 UTC

  later on: tmin & tmx over 12h

- 6h-sums: precipitation

Selection of stations algorithm: station location <-> gp

- New algorithm from Pirmin
  - will be implemented in CVS adn tested for 3 (6) months

- List of stations:
  - starting point: EWGLAM station list for verification (selection of availability of cloudiness each 3h a day) & „some more“ representative stations for COSMO-countries

  - THE_Score computed for each COSMO-country, different regions (W/N/E/S-Europe, Alps, smallest common region of all COSMO-xx, …)

Which models ? Aggregation ?

- Start with COSMO-7
- But programmation also for COSMO-2

- Temperature and windspeed: 1 gp

- Precipitation: mean of at least within same radius (~15km)

- Cloudiness: radius of 30 km

Scores in MOVI and UKMO

- Continuous parameters: Reduction of variance

  $RV = 1 – (RMSE\ prog / RMSE\ ref)^2$

  where ref = persistence

- Categorical parameters: ETS
  - ETS = R – „chance“ / T –“chance“

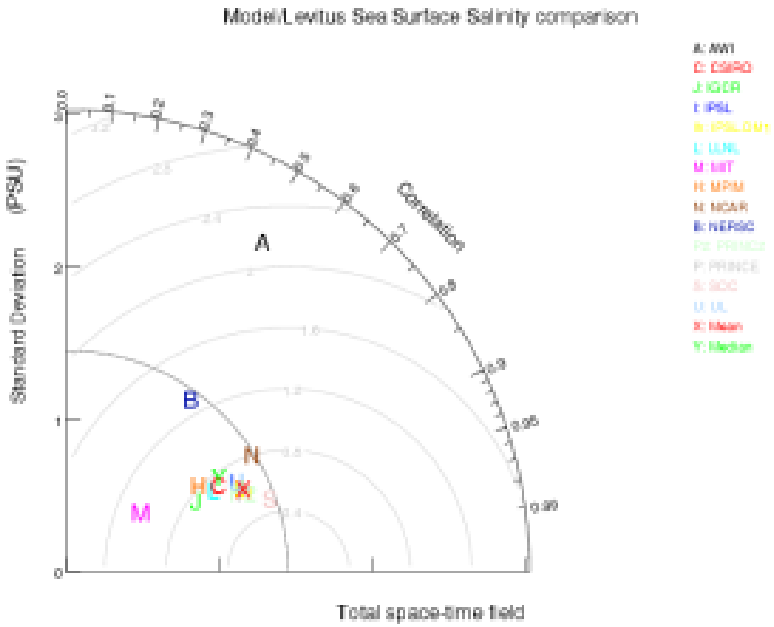
    R= number of obs events correctly forecast

    T = number of events which were either observed or forecasted

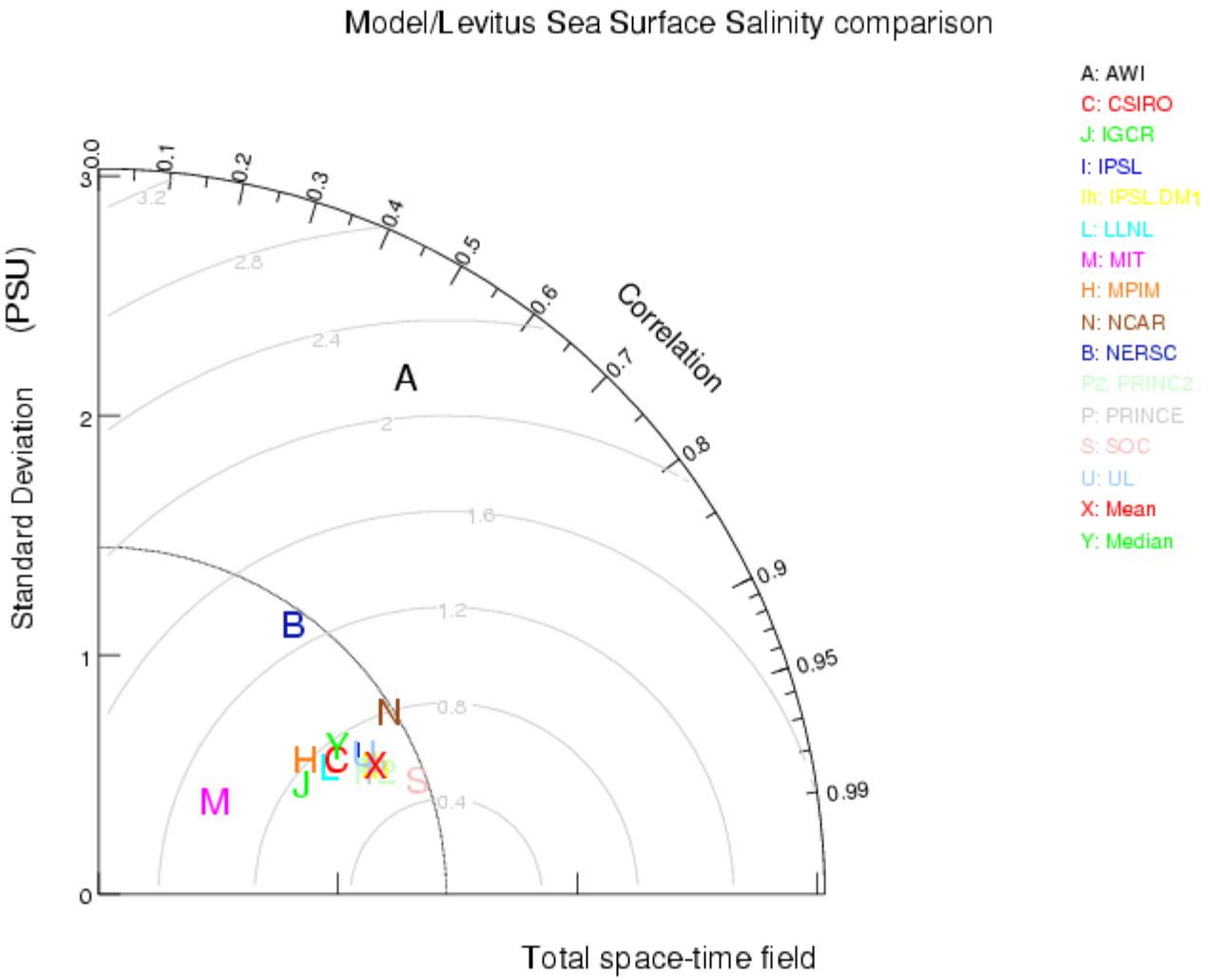
-> global score S and **COSMO-index COSI** = S/S_0 x100

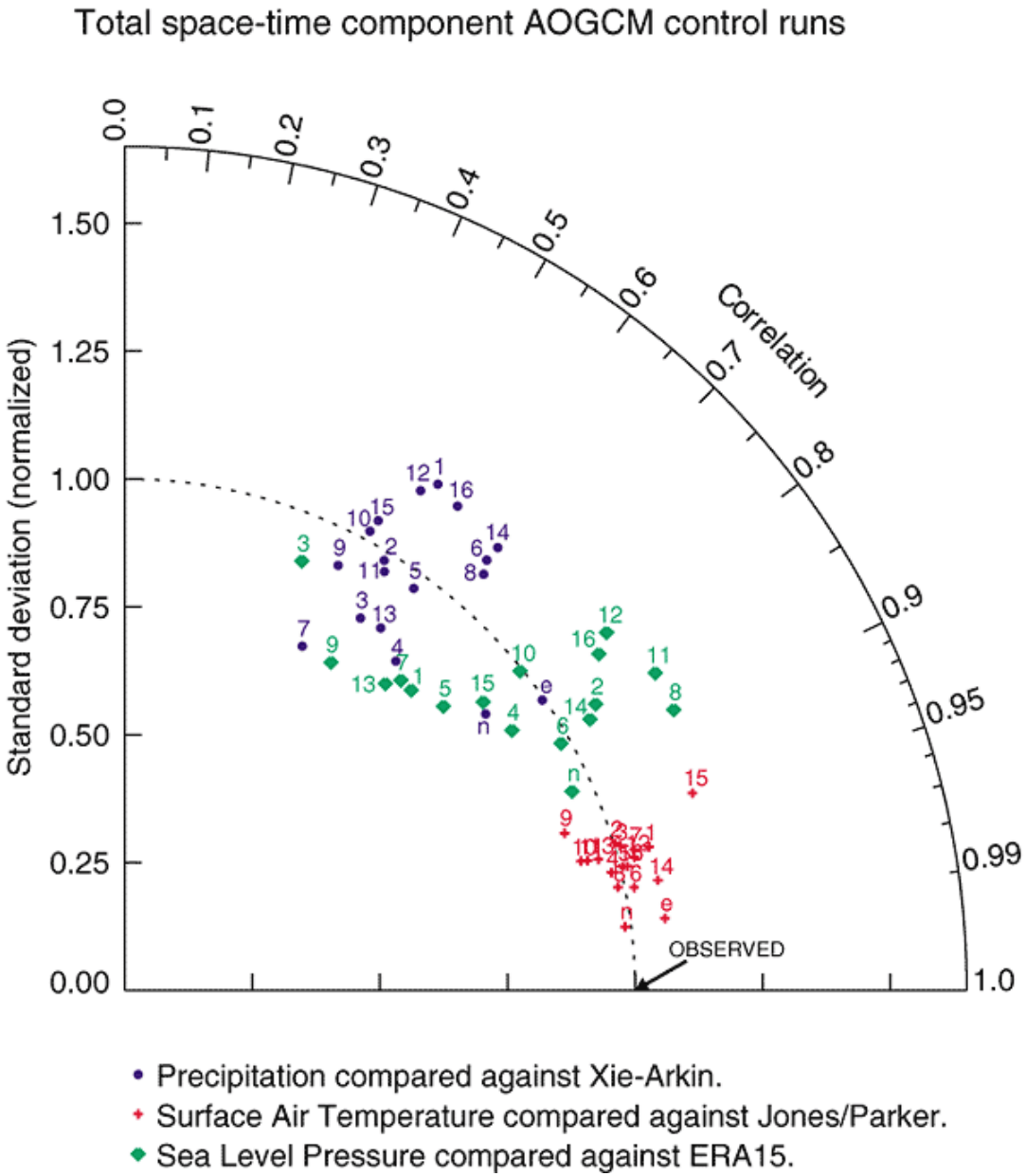
Towards a global „administrator/scientific“ score

- use of a few key statistics from SYNOP and TEMP verification for the global evaluation of COSMO:
- combine several statistics into one diagram



Taylor diagram


Model/Levitus Sea Surface Salinity comparison
A: AWI
C: CSIRO
J: IGCR
I: IPSL
Ih: IPSL.DM1
L: LLNL
M: MIT
H: MPIM
N: NCAR
B: NERSC
P2: PRINC2
P: PRINCE
S: SOC
U: UL
X: Mean
Y: Median
Standard Deviation (PSU)
Correlation
Total space-time field
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
0.95
0.99
3.2
2.8
2.4
2
1.6
1.2
0.8
0.4
0
1
2
3
A
B
M
N
H
J
L
C
I
X
S


Total space-time component AOGCM control runs
Standard deviation (normalized)
0.00
0.25
0.50
0.75
1.00
1.25
1.50
Correlation
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
0.95
0.99
1.0
OBSERVED
Precipitation compared against Xie-Arkin.
Surface Air Temperature compared against Jones/Parker.
Sea Level Pressure compared against ERA15.