

Total Ozone Data Base for COST-726

WG1 & WG2 Core Group Meeting, Brussels, January 29-30, 2007

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- Model for reconstruction of daily total O₃
- Examples of the reconstructed time series
- Structure of the COST-726 Data Base

COST-726 Total Ozone Data Base

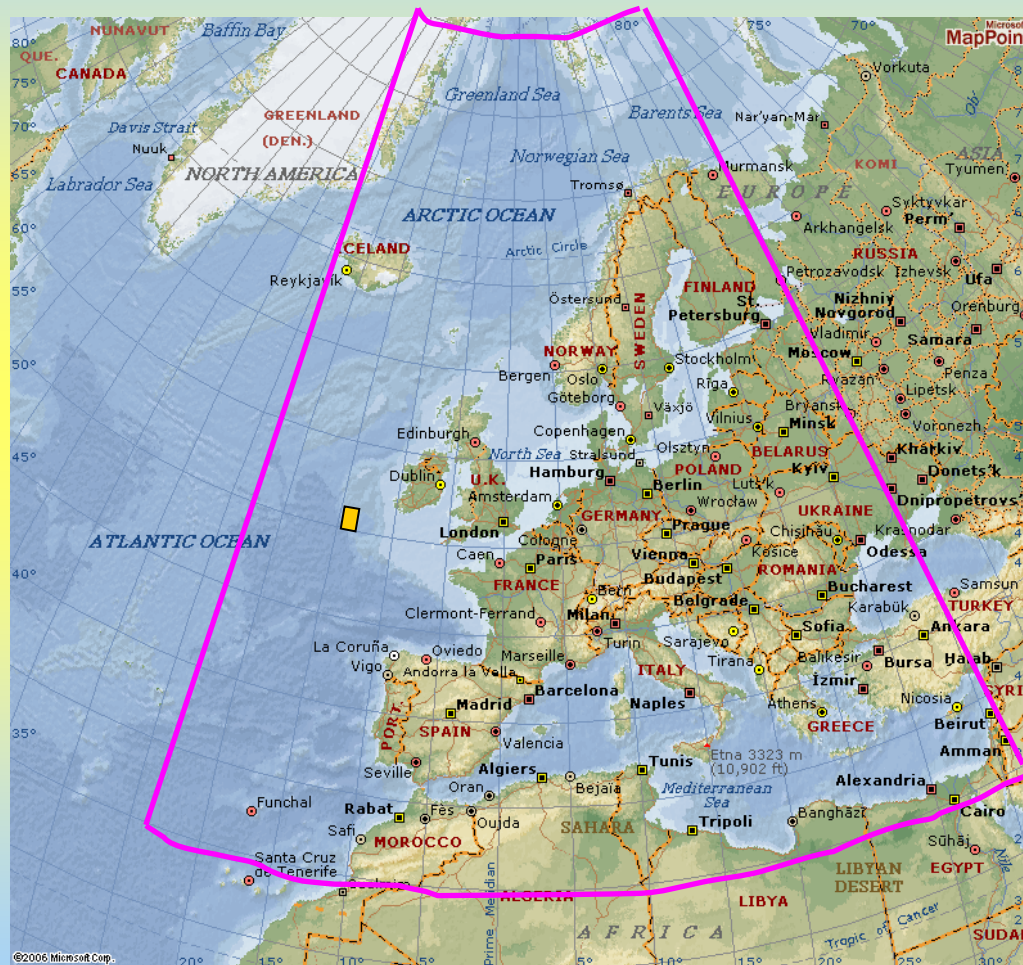
AREA

25.625°W-35.625°E

80.5°N-30.5°N

GRID SIZE

1.25°(lon.)x1.0°(lat.)



Input to Regression Model

**National Institute of Water and Atmosphere Research
(NIWA), Lauder, New Zealand,
Assimilated Total Ozone Data Base 1979-2004
(Bodeker et al., 2005)**

Version 8 Nimbus 7 and Earth Probe TOMS

GOME version 3.1

KNMI TOGOMI

Version 8 SBUV from NIMBUS 7, NOAA9, NOAA 11, and
NOAA 16 satellite

Dobson Stations (30°-60°N)

Bias < 1% ± 2-3%

Total Ozone Reconstruction

Two Steps Regression Model

- 1- $\text{Ozone}(\text{month}) = \text{Regression_A}$ (Indices of Global Atm. Circulation, Monthly Mean Meteo. Variables)
2. $\text{Ozone}(\text{day}) - \text{Ozone}(\text{month}) = \text{Regression_B}$ (Daily Meteo Variables – Monthly Mean Meteo Variables)

Training period 1979-2004:

$\text{Ozone}(\text{month})$, $\text{Ozone}(\text{day})$ from NIWA Data Base

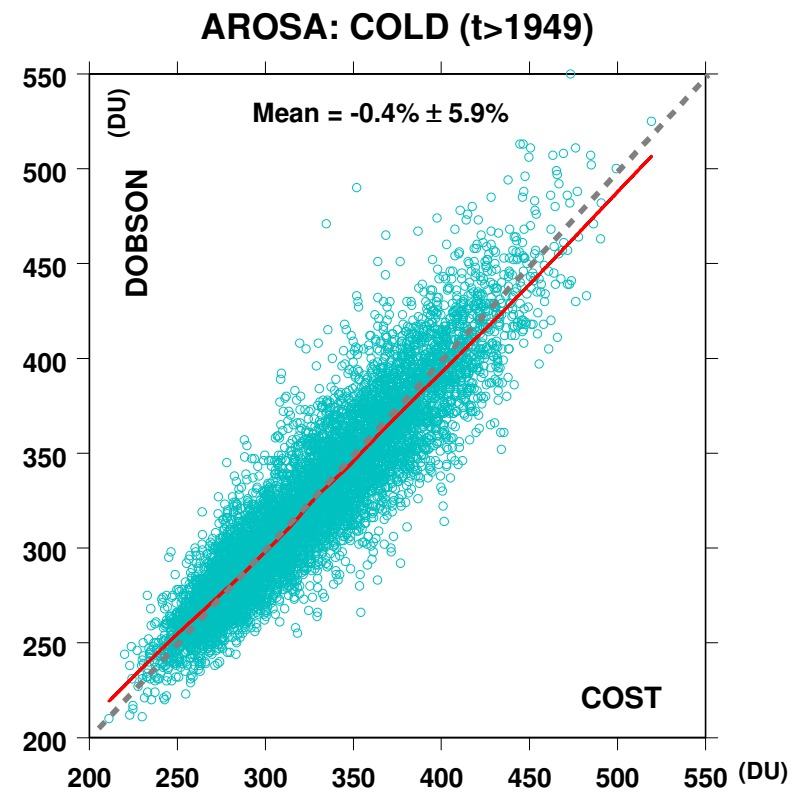
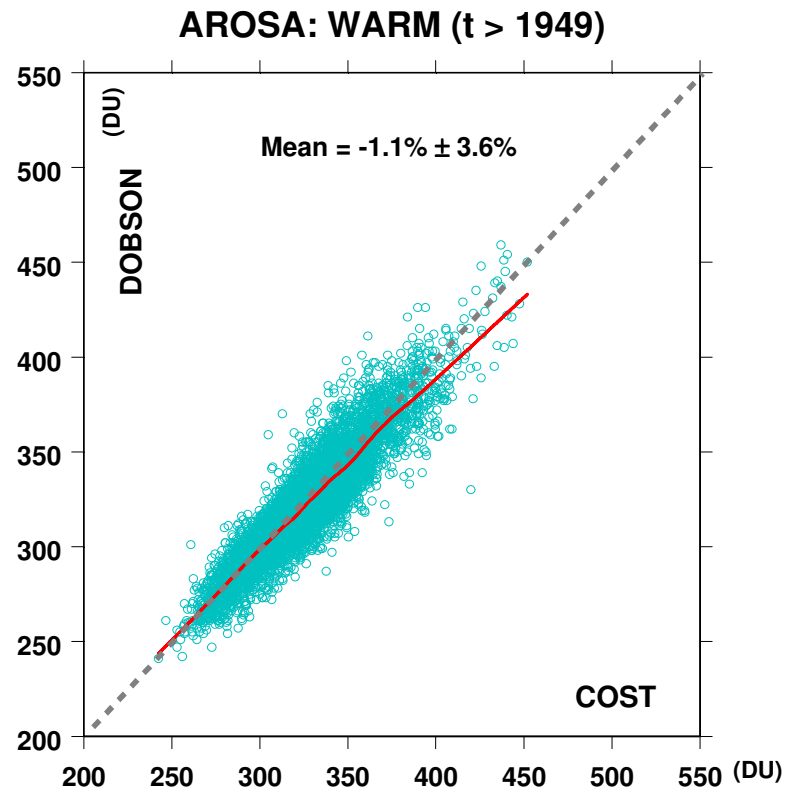
$$\text{Model Ozone} = \text{Regression_A} + \text{Regression_B}$$

Model Total Ozone since beginning of proxy data -1950 !

Comparison for AROSA

May-September

October - April

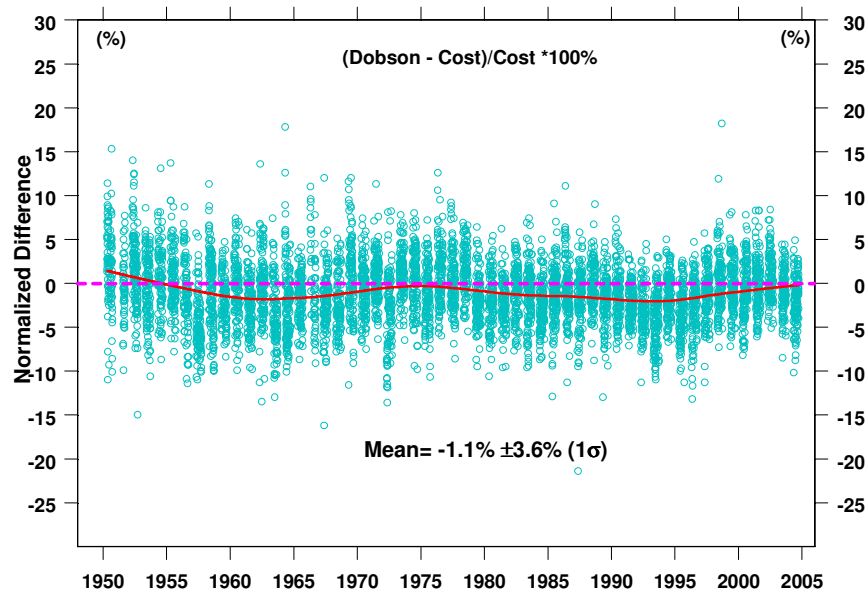


Comparison for AROSA

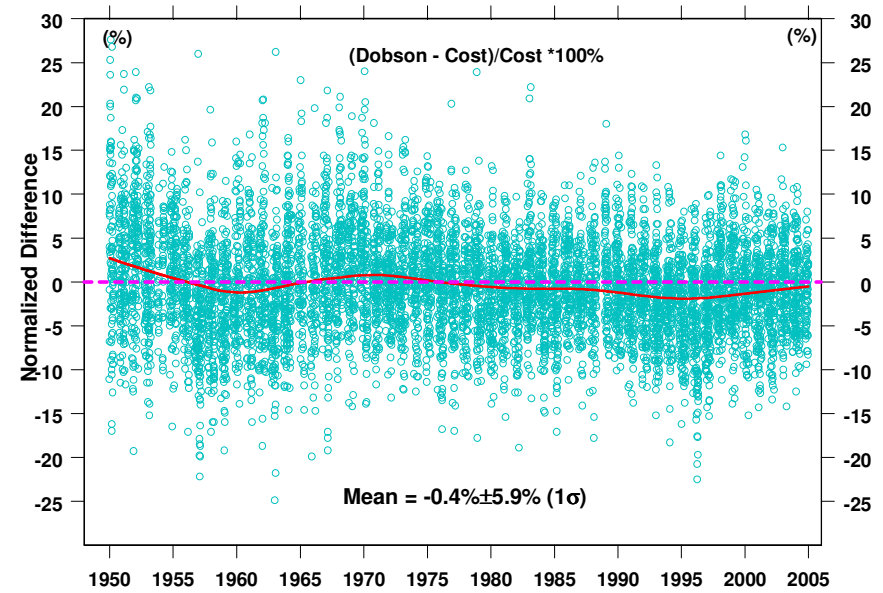
May-September

October - April

AROSA: Warm-Period



AROSA: Cold-Period



General Comments

**Performance of the COST model (warm period) for $t < 1979$
long-term bias $\pm 2\%$, standard dev. 3%-7%**

(larger standard errors probably due to uncertainties of the Dobson measurements in cloudy conditions, see Lerwick)

COST reconstructed ozone almost equivalent ERA-40 Ozone

usually bias smaller for COST but smaller standard dev for ERA-40

**COST and ERA-40 model better than simplified model
using constant daily ozone values derived from NIWA data**

Available Total Ozone Data Bases

NAME	METHOD	Size (MB)	TIME
COST-726	STATISTICAL	176	01.01.1950 31.12.2004
ERA-40	DYNAMICAL GCM	144	01.09.1957 31.08.2002
NIWA	MEASUREMENTS	83	01.01.1979 31.12.2004
NIWA + ERA-40	MEASUREMENTS IF NO DATA ERA-40	83	01.01.1979 31.12.2004

FINAL DVD

.txt files containing data bases

COST_726, ERA-40, NIWA, NIWA+Era-40

readme.doc document

my .pdf presentations

(MCM7, WG1&WG2 Core Group Meeting)

zipped file containing all files