



MEDIZINISCHE UNIVERSITÄT  
INNSBRUCK

**UV@INNSBRUCK**  
Division for Biomedical Physics  
Innsbruck Medical University



DEPARTMENT FÜR  
PHYSIOLOGIE UND  
MEDIZINISCHE PHYSIK

# UV-Index Map of Austria

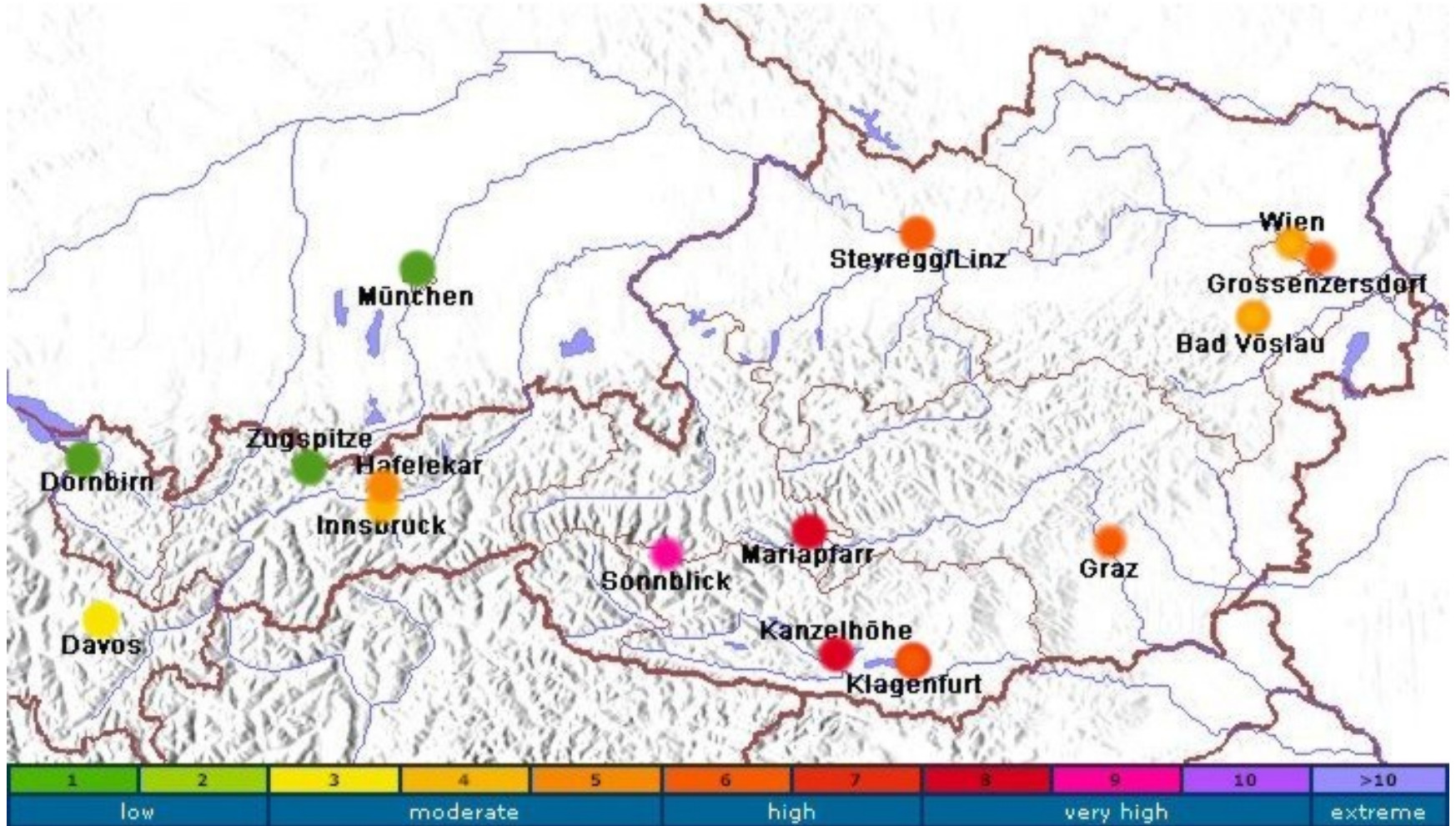
**B. Schallhart<sup>1</sup>, M. Blumthaler<sup>1</sup>, J. Schreder<sup>2</sup>, J. Verdebout<sup>3</sup>**

1 Biomedical Physics, Innsbruck Medical University, Austria

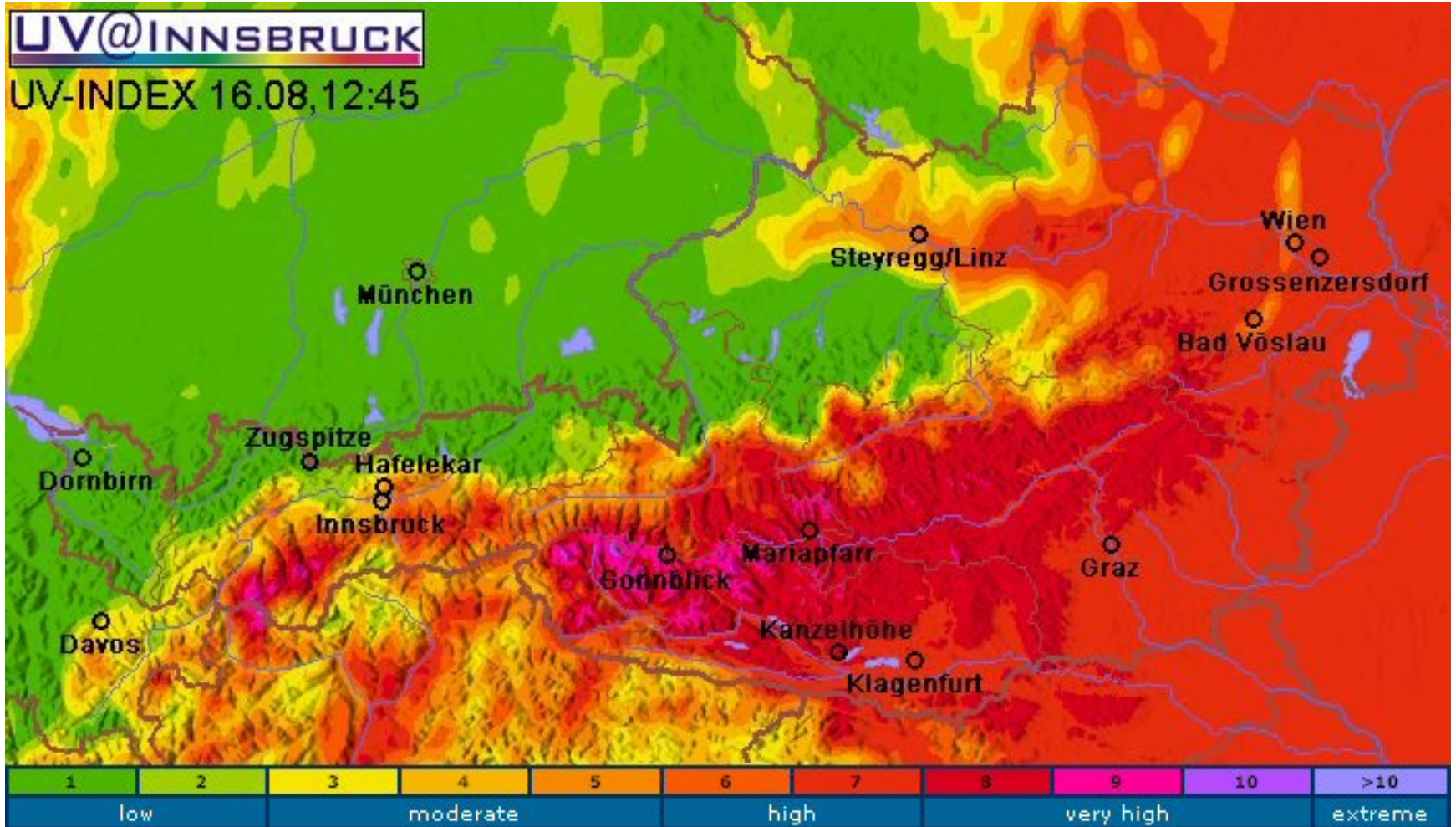
2 CMS-Ing.Dr.Schreder GmbH, Kirchbichl, Austria

3 European Commission - Joint Research Center, Ispra, Italy

# UVI Measurements

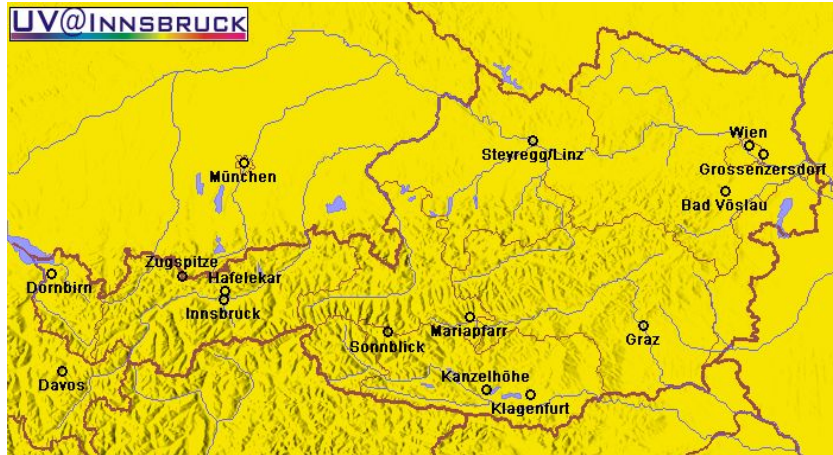


# UV-Index Map determined using Cloud Information



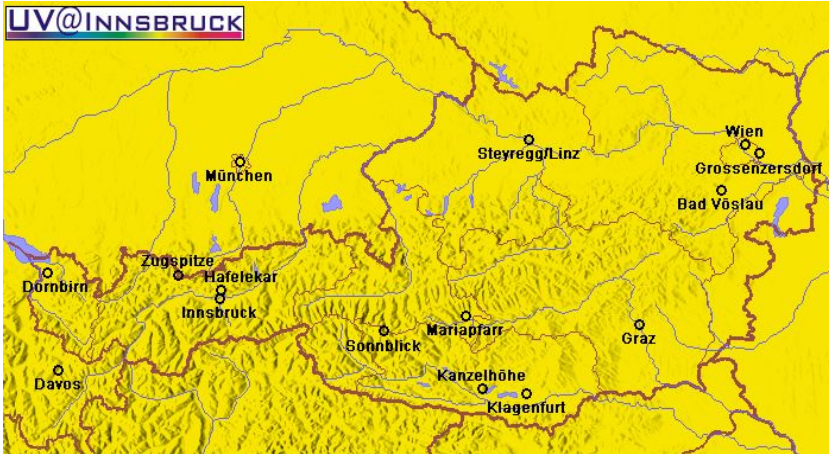
# Overview

## 1) Austrian UVB Monitoring Network



# Overview

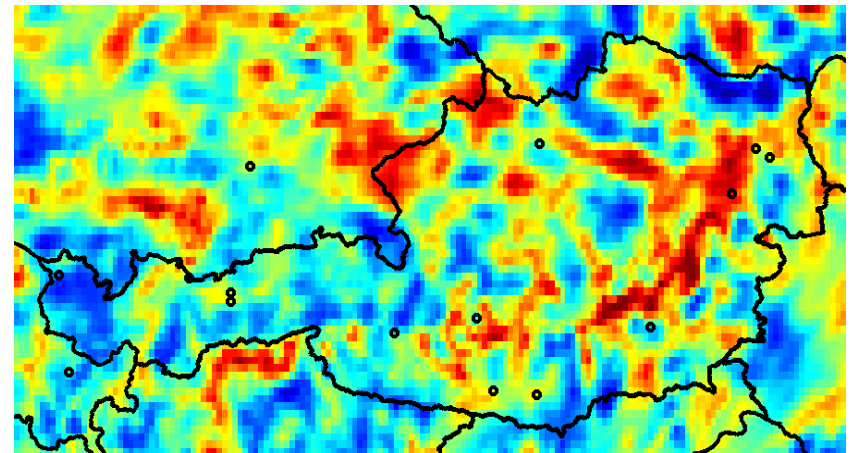
## 1) Austrian UVB Monitoring Network



## 2) MSG Data

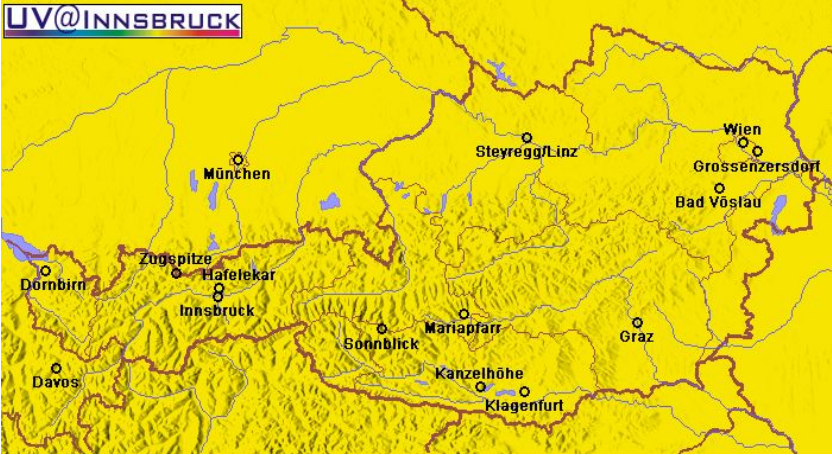


## 3) Cloud Attenuation Factors

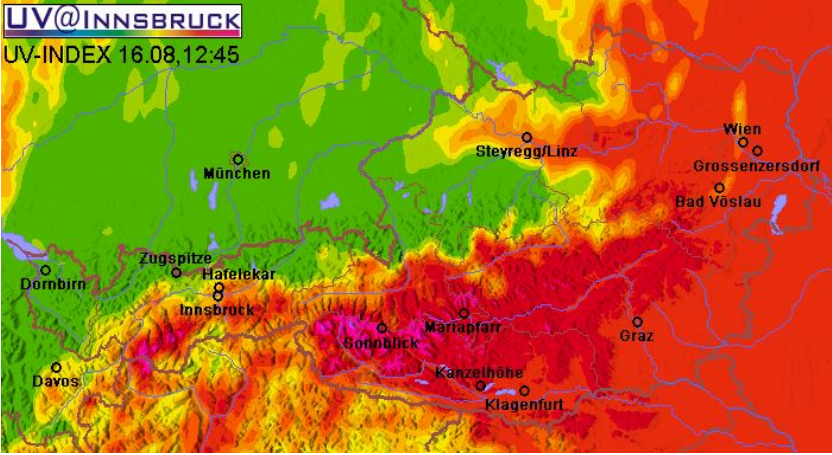


# Overview

## 1) Austrian UVB Monitoring Network



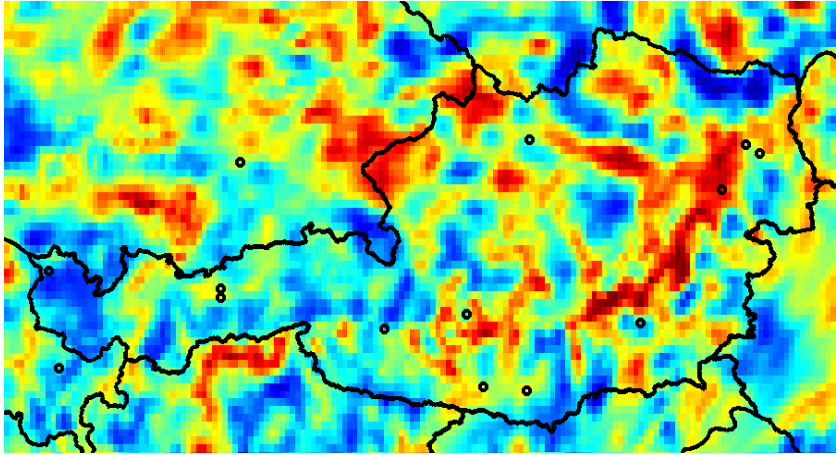
## 5) UV-Index Map



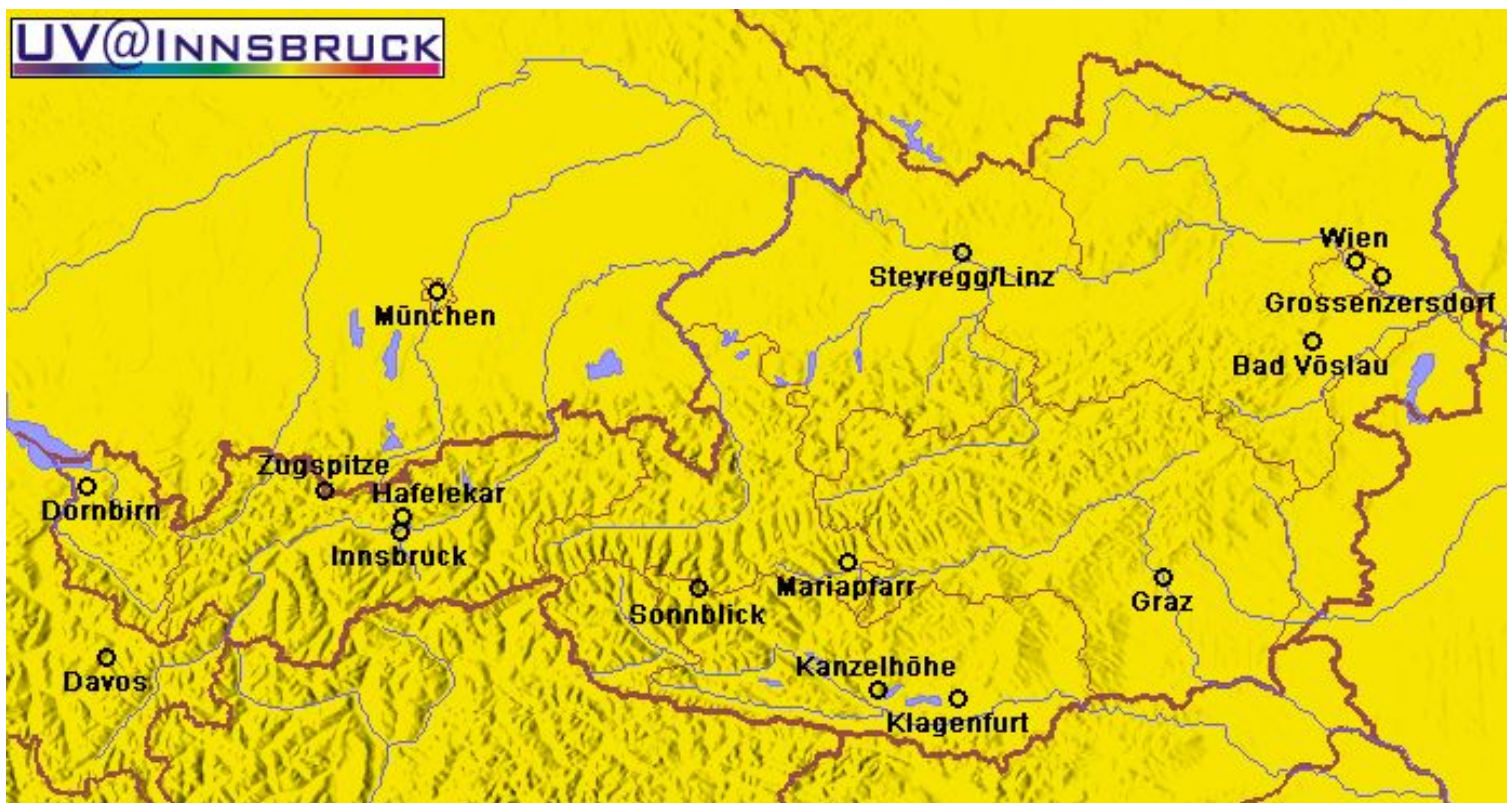
## 2) MSG Data



## 3) Cloud Attenuation Factors

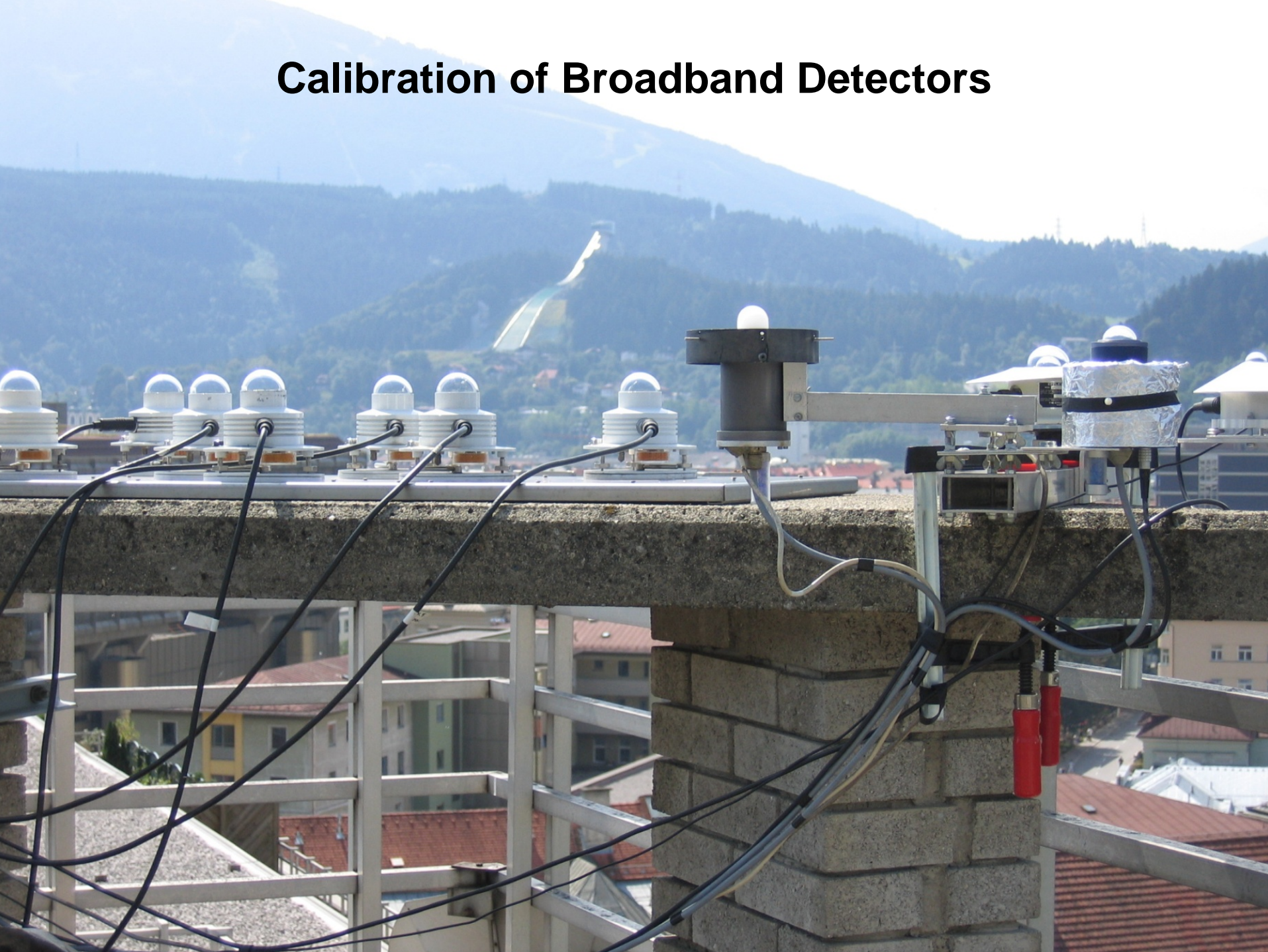


# 1) Austrian UVB Monitoring Network



Dornbirn	410 m	<b>München</b>	<b>530 m</b>	Steyregg	335 m
<b>Davos</b>	<b>1610 m</b>	Sonnenblick	3106 m	Graz	348 m
<b>Zugspitze</b>	<b>2660 m</b>	Mariapfarr	1153 m	Bad Vöslau	286 m
Innsbruck	577 m	Gerlitz	1526 m	Wien	153 m
Hafelekar	2275 m	Klagenfurt	448 m		

# Calibration of Broadband Detectors

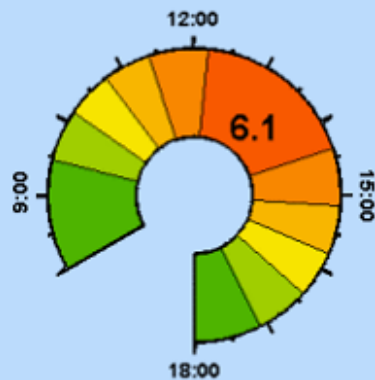


## Davos 1610m +

see also today | yesterday | last week | last month

maximum expected values  
for UV-Index

14. 9. 2007

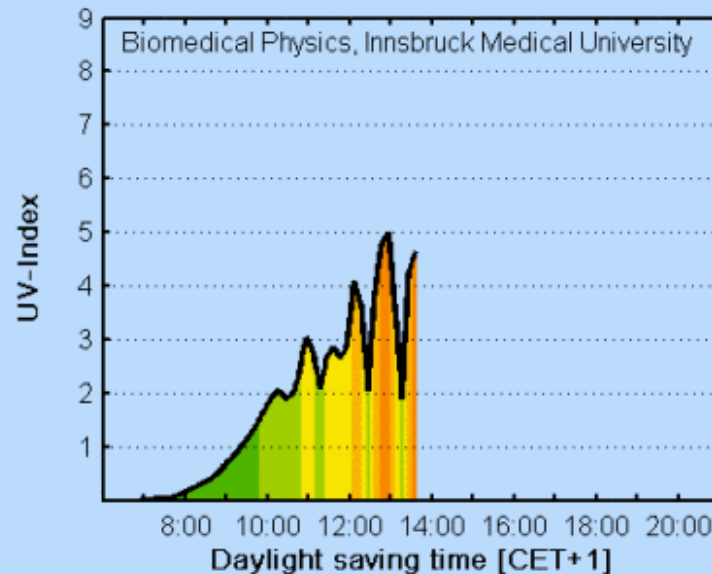


Daylight saving time [CET+1]

Ozone: 287 DU

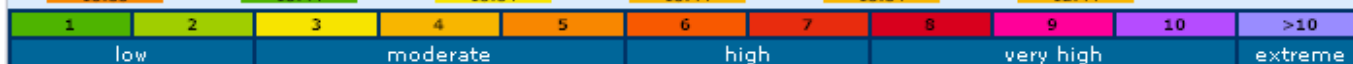
Ozone value is based on  
ozone forecast by DWD

measured values for UV-Index

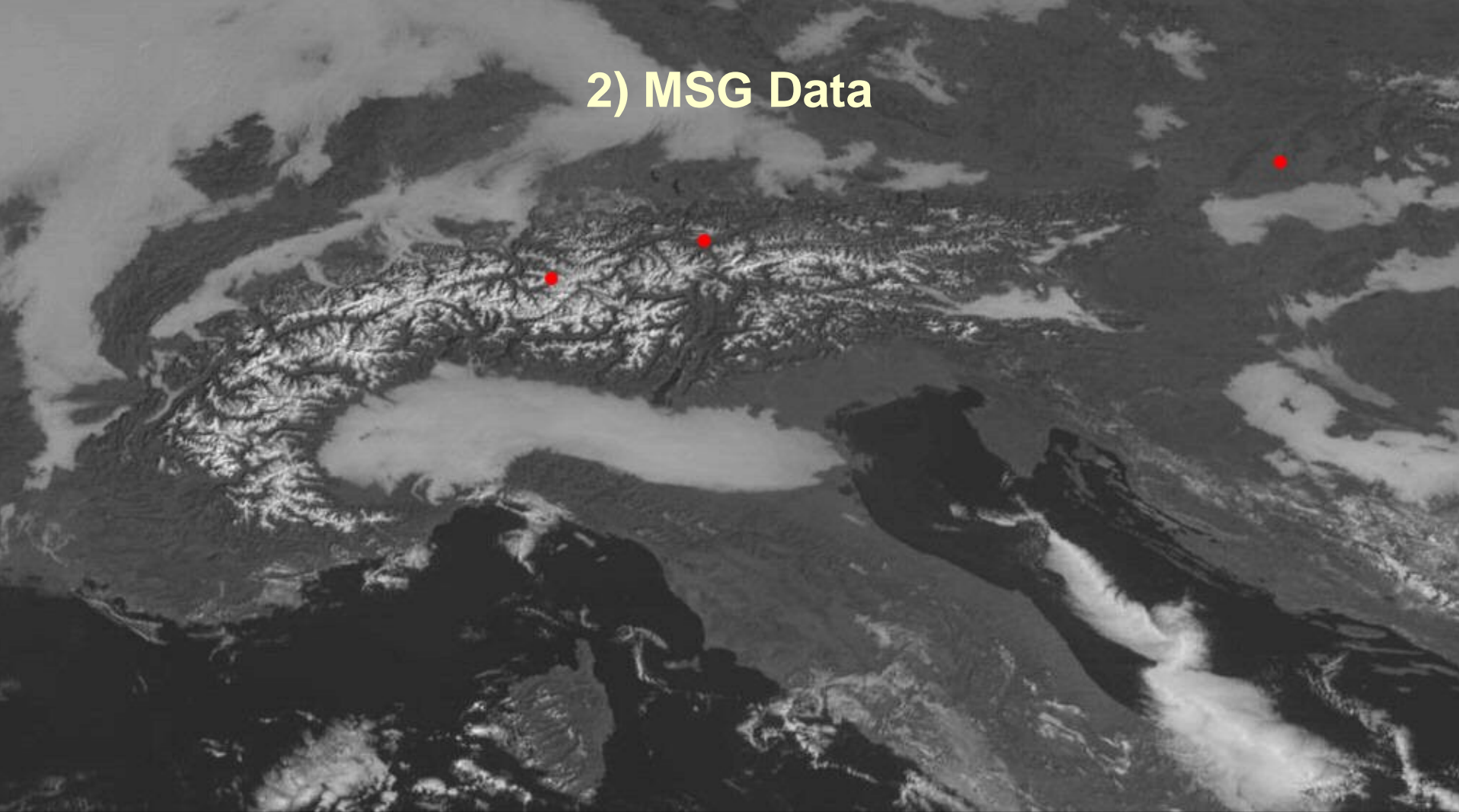


Station Davos is operated by Physikalisches-Meteorologisches Observatorium  
Davos, World Radiation Center

Dornbirn <b>3.9</b> 13:44	Zugspitze <b>5.3</b> 13:34	Hafelekar <b>3.1</b> 12:04	Sonnblick <b>6.7</b> 13:24	Gerlitzten <b>5.2</b> 13:44	Steyregg. <b>4.1</b> 12:44	Wien <b>3.8</b> 13:34
Davos <b>4.6</b> 13:35	Innsbruck <b>1.4</b> 13:44	München <b>2.9</b> 13:54	Mariapfarr <b>4.2</b> 13:44	Klagenfurt <b>4.0</b> 13:34	Bad Vöslau <b>3.5</b> 12:44	



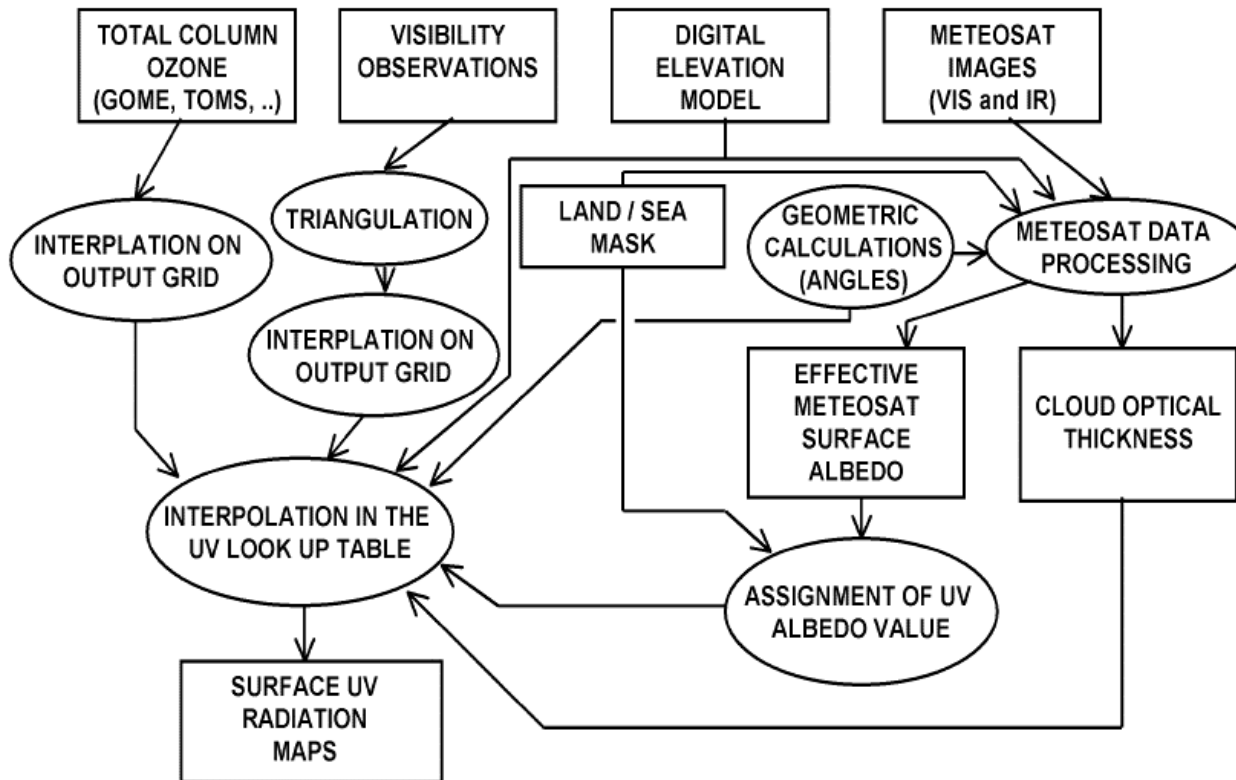
## 2) MSG Data



### HRIT data

- pixel size: 4 km (E-W) x 5.5 km (N-S), 0.05°
- timing: every 15 min
- spectral channels: 600 nm 1.6 μm 12 μm

# Surface UV Radiation Maps (J. Verdebout)

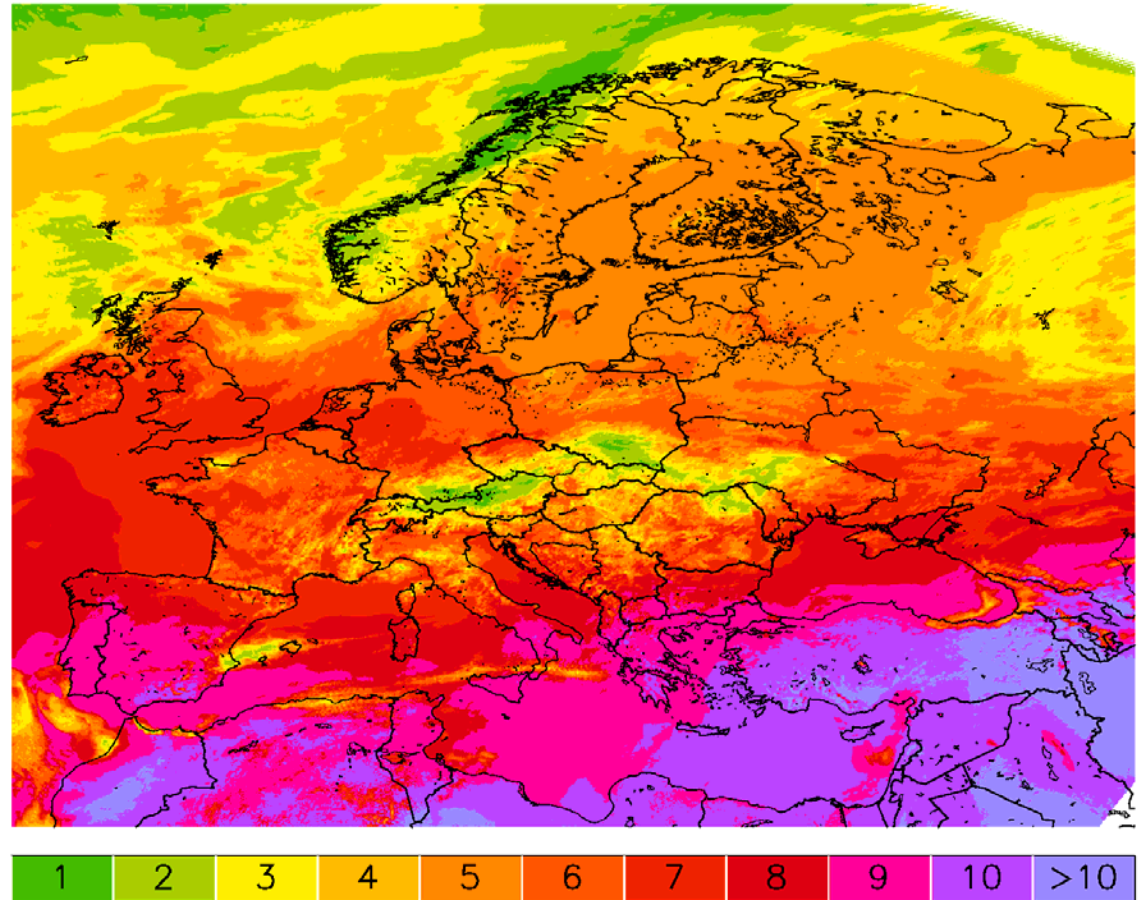
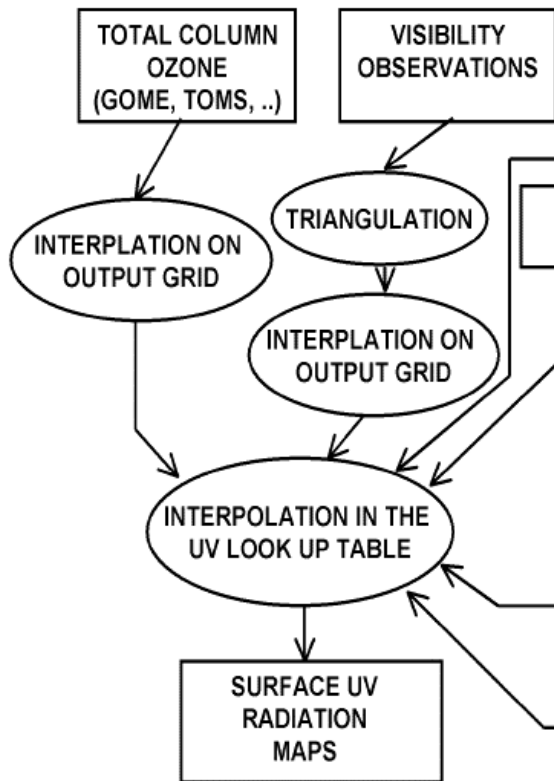


Verdebout, J., A methode to generate surface UV radiation maps over Europe using GOME, Meteosat, and ancillary geophysical data, *J. Geophys. Res.*, 105, D4, 5049–5058, 2000.

Verdebout, J., A European satellite-derived UV climatology available for impact studies, *Rad. Prot. Dos.*, 111, 4, 407–411, 2004.

# Surface UV Radiation Maps (J. Verdebout)

Satellite UV index on July 10th 2005



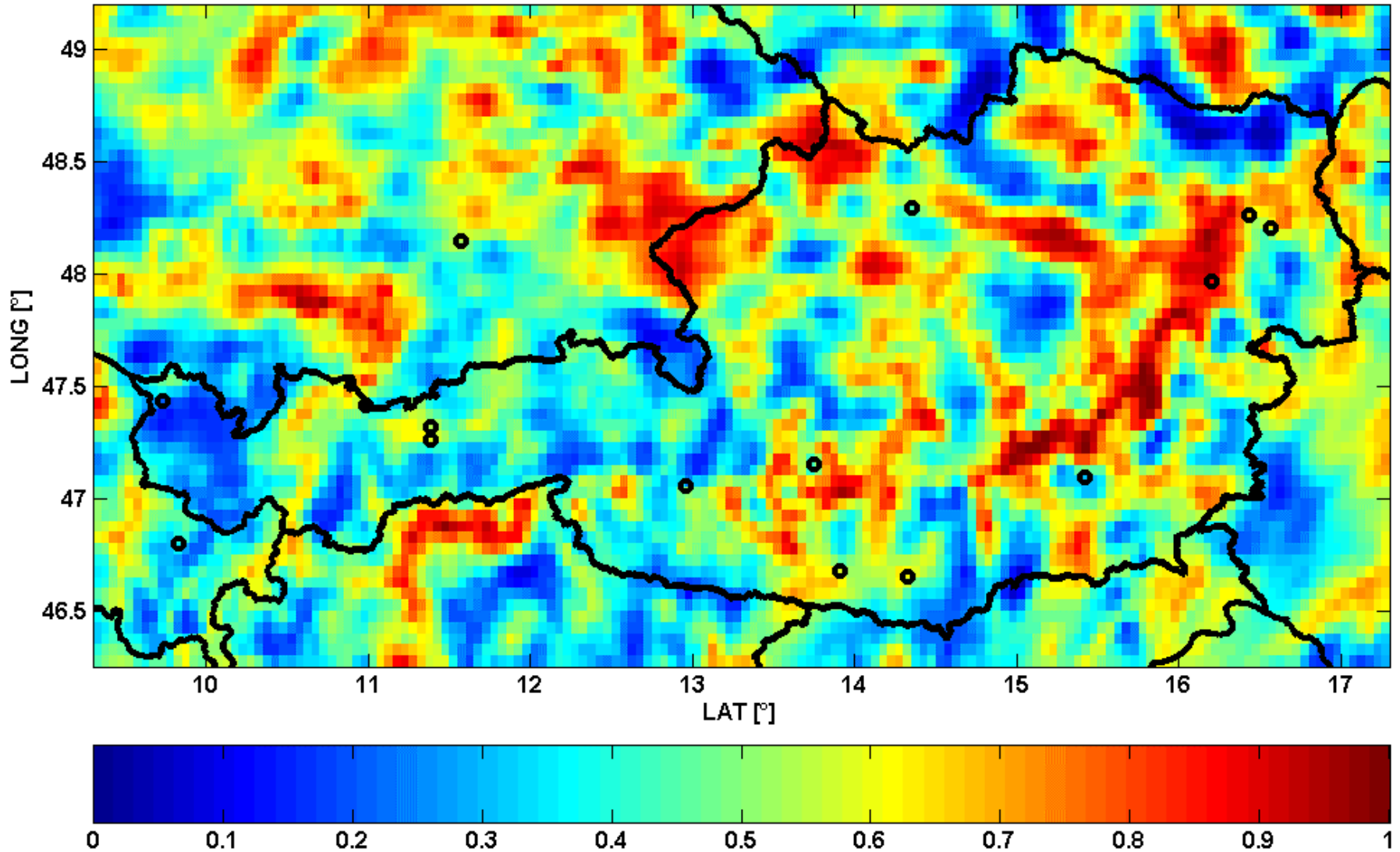
UV index

Verdebout, J., A methode to generate surface UV radiation maps over Europe using GOME, Meteosat, and ancillary geophysical data, *J. Geophys. Res.*, 105, D4, 5049–5058, 2000.

Verdebout, J., A European satellite-derived UV climatology available for impact studies, *Rad. Prot. Dos.*, 111, 4, 407–411, 2004.

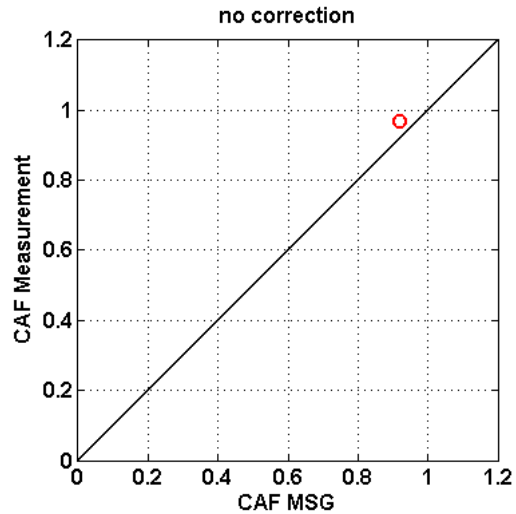
### 3) Cloud Attenuation Factors $CAF_{MSG}$

$$UVI_{\text{clear sky}} * CAF_{MSG} = UVI_{MSG \text{ pixel}}$$



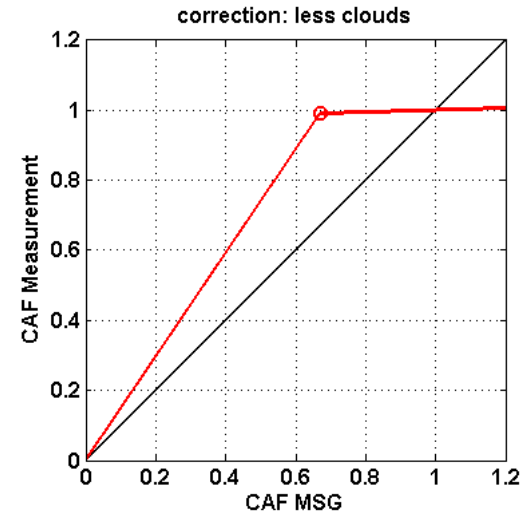
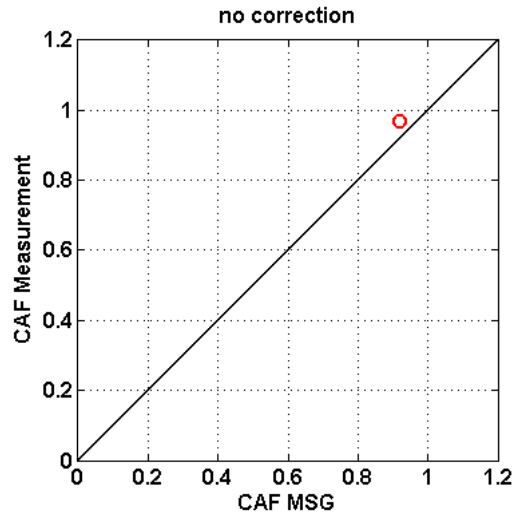
## 4) Correction of $CAF_{MSG}$ according to UVI-Measurements

At each site:  $CAF_{\text{measurement}} = UVI_{\text{measurement}} / UVI_{\text{clear sky model}}$



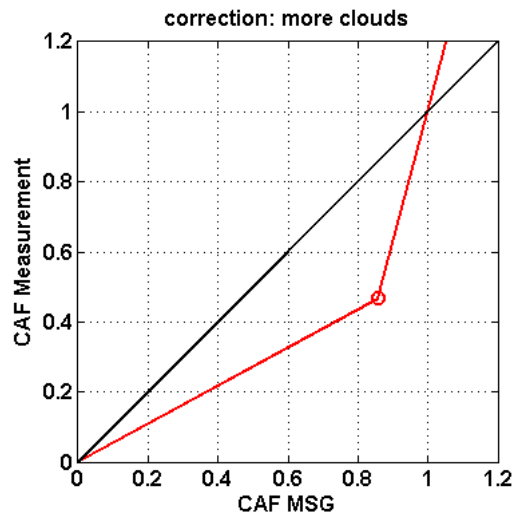
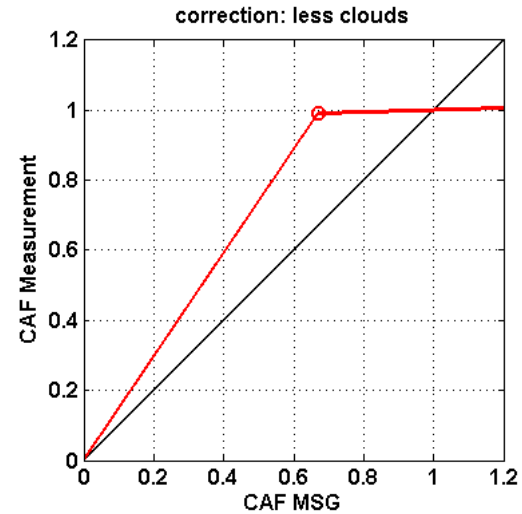
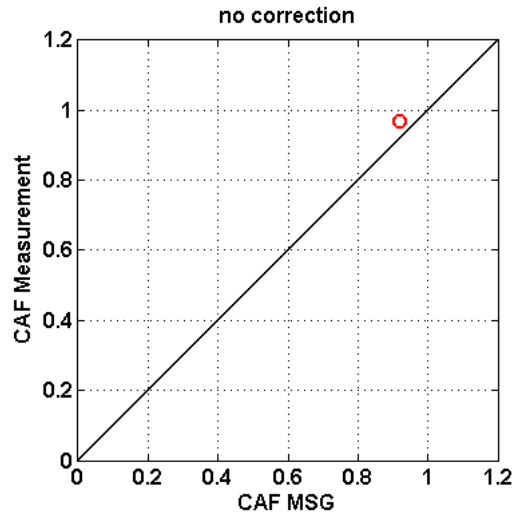
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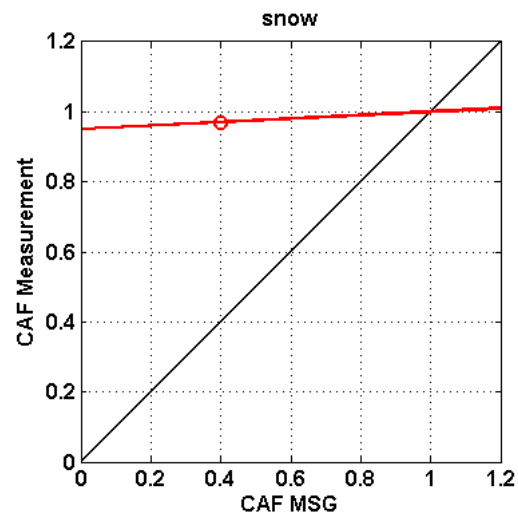
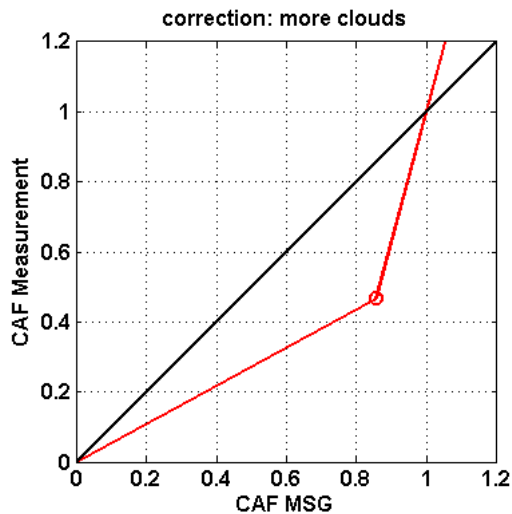
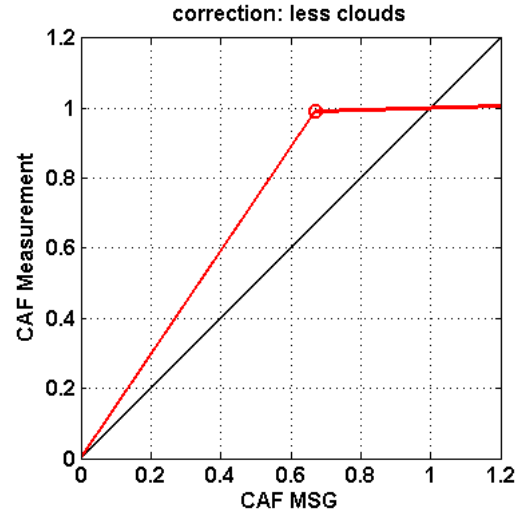
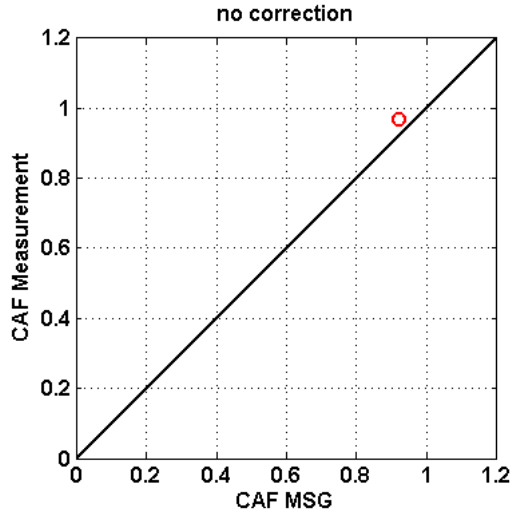
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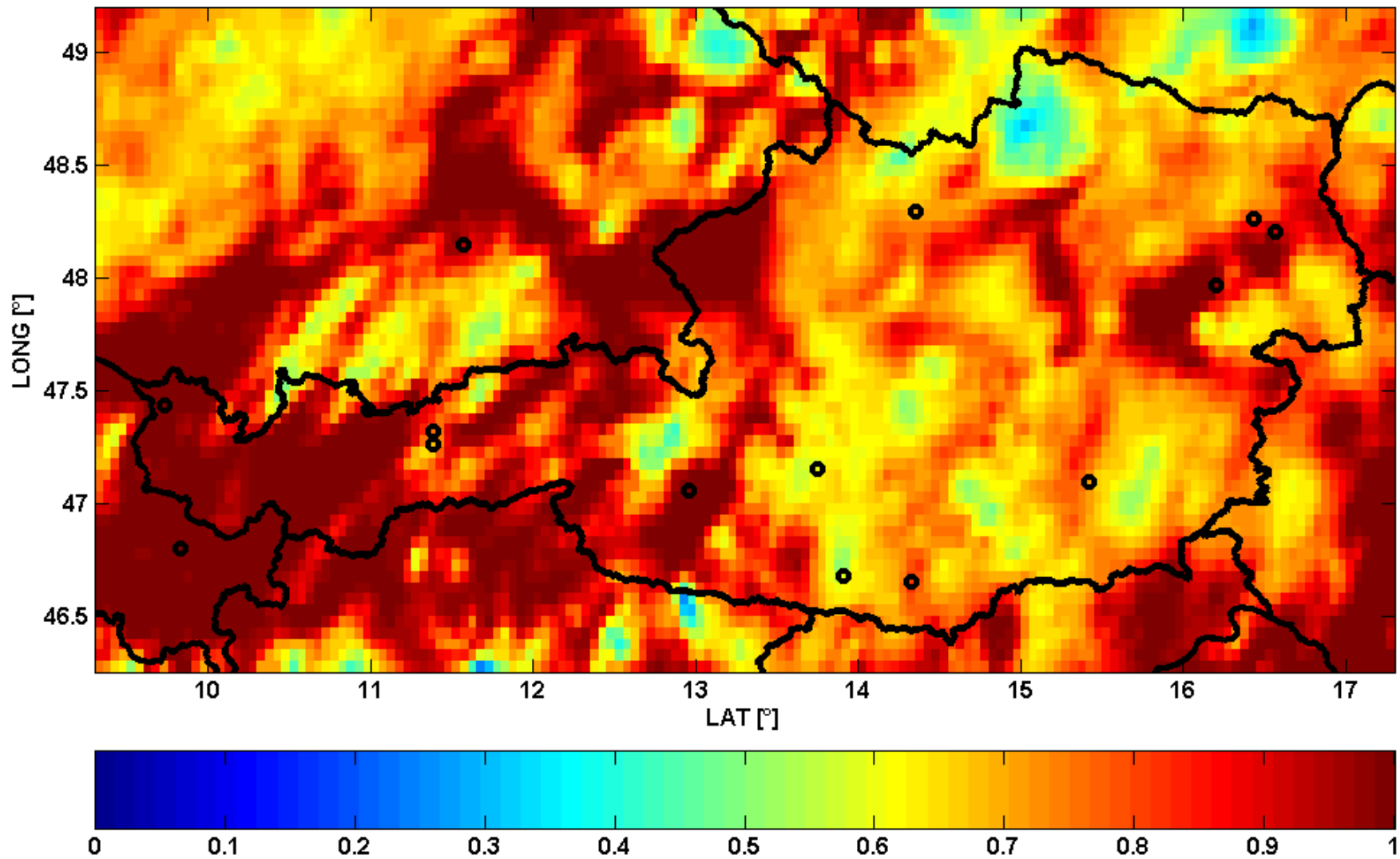


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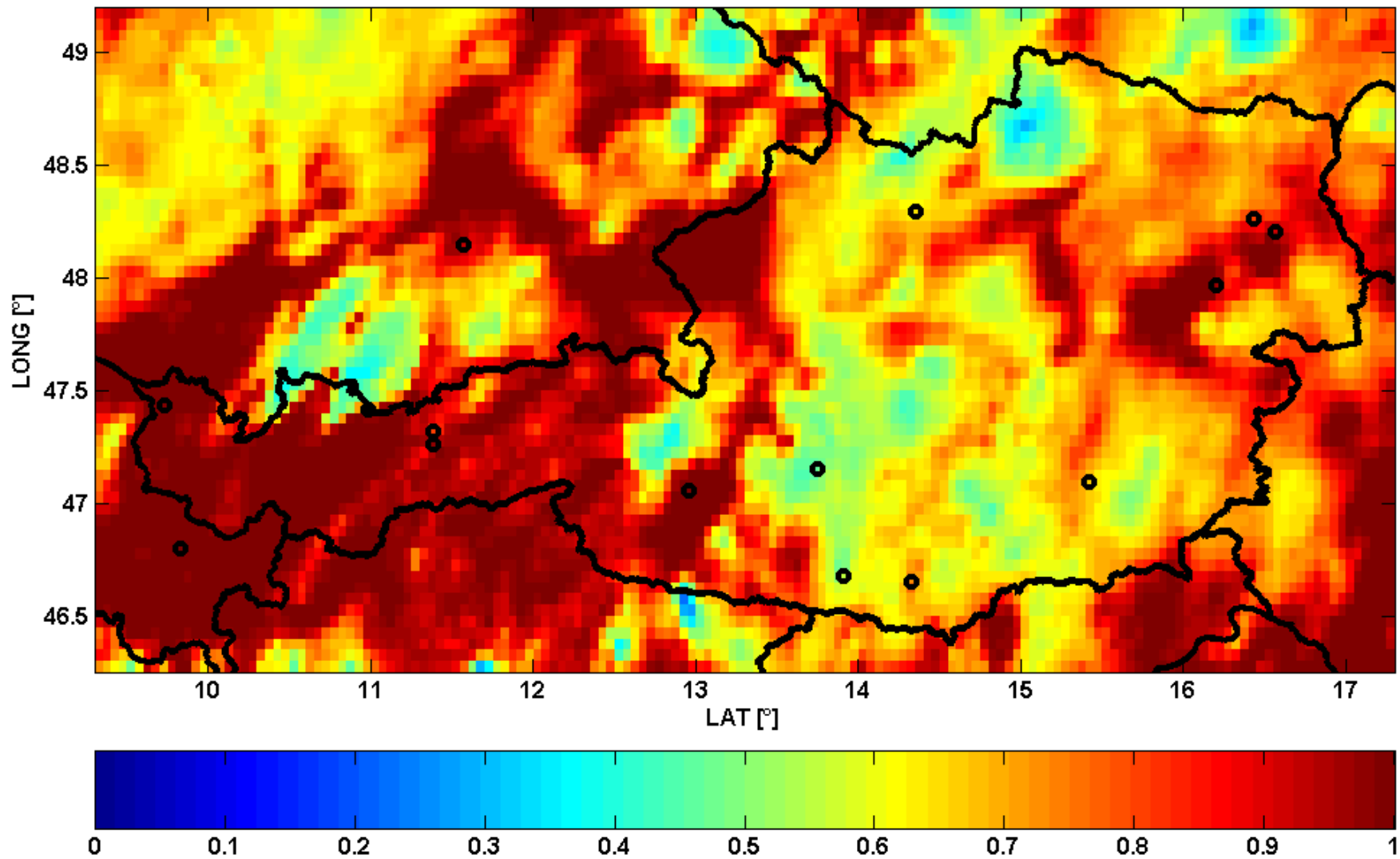
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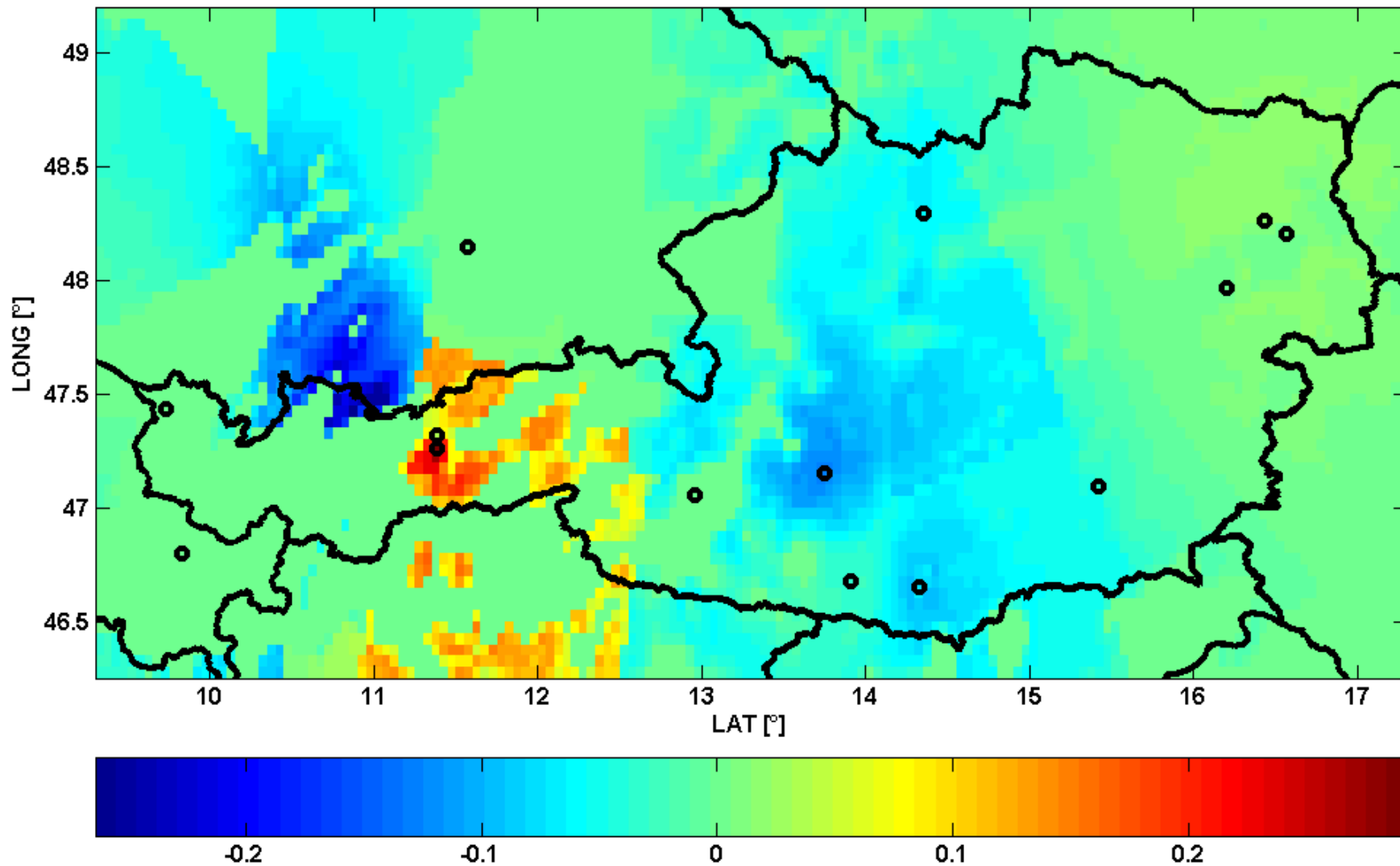
# Original $CAF_{MSG}$



# Corrected CAF<sub>MSG</sub>

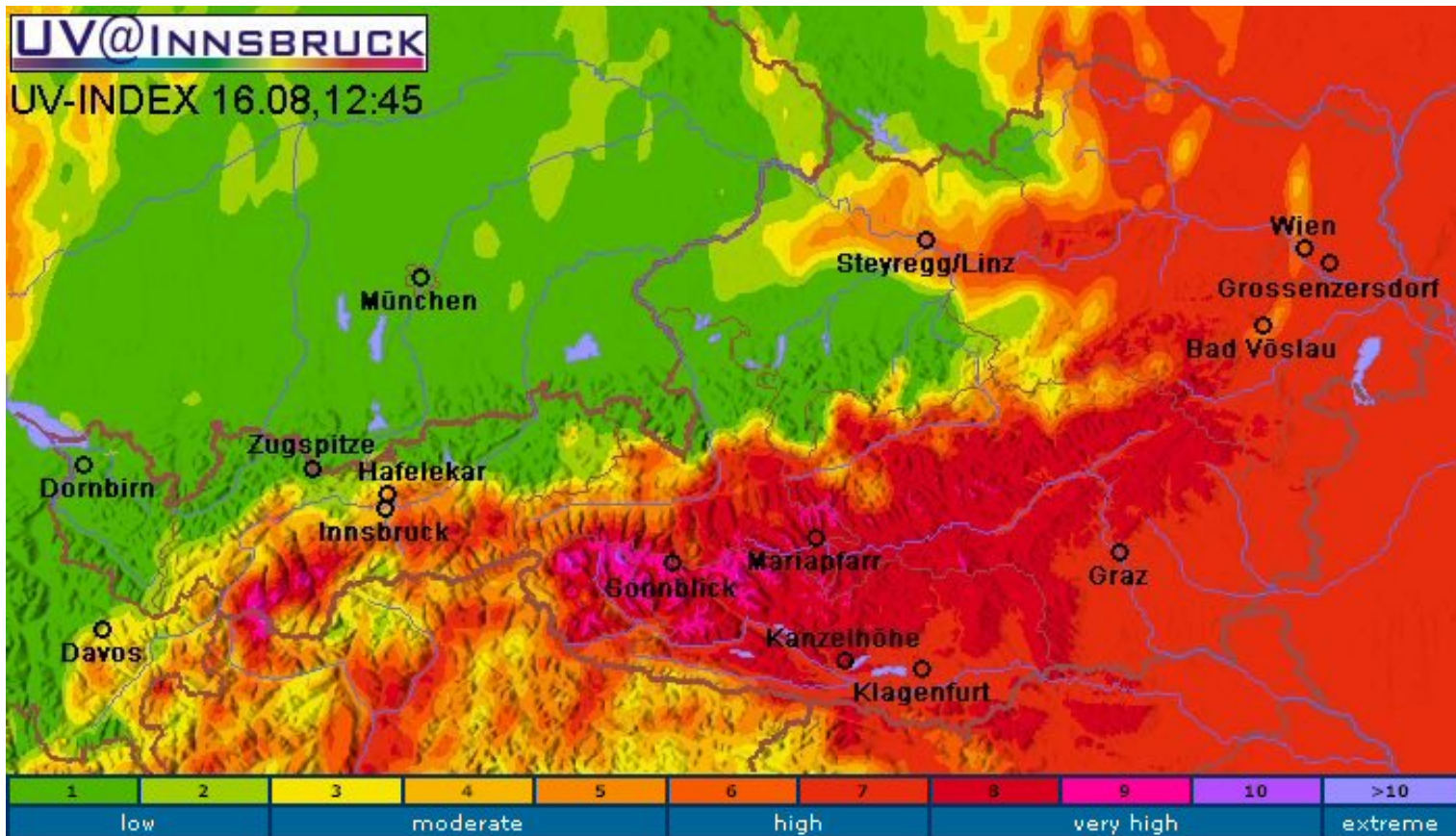


# Corrected - Original $CAF_{MSG}$



## 5) UV-Index Map

$$UVI_{\text{map pixel}} = UVI_{\text{clear sky model}} * CAF_{\text{MSG, corrected}}$$



**UV@INNSBRUCK**

UV-INDEX 11.07,08:00



**THANK YOU  
FOR YOUR ATTENTION**

**[www.uv-index.at](http://www.uv-index.at)**