EUMETSAT's Drought & Vegetation Data Cube

A prototype

Information Day: 11 May 2021

Christine Träger-Chatterjee

Agenda D&V Cube Info Day

09:30 – 09:45: Welcome & Introduction

09:45 – 11:00: The Drought & Vegetation Data Cube: Introduction to the variables

> (2m Temperature &) Solar Radiation (SIS, DNI, SDU)
> Precipitation
> Root Zone Soil Wetness
> *~10:15 break of 5 min*
> Land Surface Temperature
> Vegetation Parameter (FVC, LAI, fAPAR)
> NDVI
>
> Reference Evapotranspiration

10:45 – 11:15: COFFEE BREAK

11:15 – 11:45: Access to the Data Cube and CM SAF R Toolbox demonstration

11:45 – 12:15: Climatological drought monitoring in Switzerland using SAF satellite products

12:15 – 12:45: What now? – The Exploration Phase

**12:45 – 13:00:** Q & A and Feedback

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2m Air Temperature

- Temperature 2m above the ground
- From ERA-5 land re-analysis

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Global Radiation

- Total amount of solar radiation reaching the Earth's surface

- can accurately be derived from satellite observations, because…

  - ✓ … satellites can well detect **clouds** (= bright regions) during daytime

  - ✓ … **clear-sky solar radiative transfer** is well simulated assuming auxiliary data (e.g., water vapor, aerosol) is available

MET9 VIS006 2008-09-02 12:00 UTC ⬙ EUMETSAT
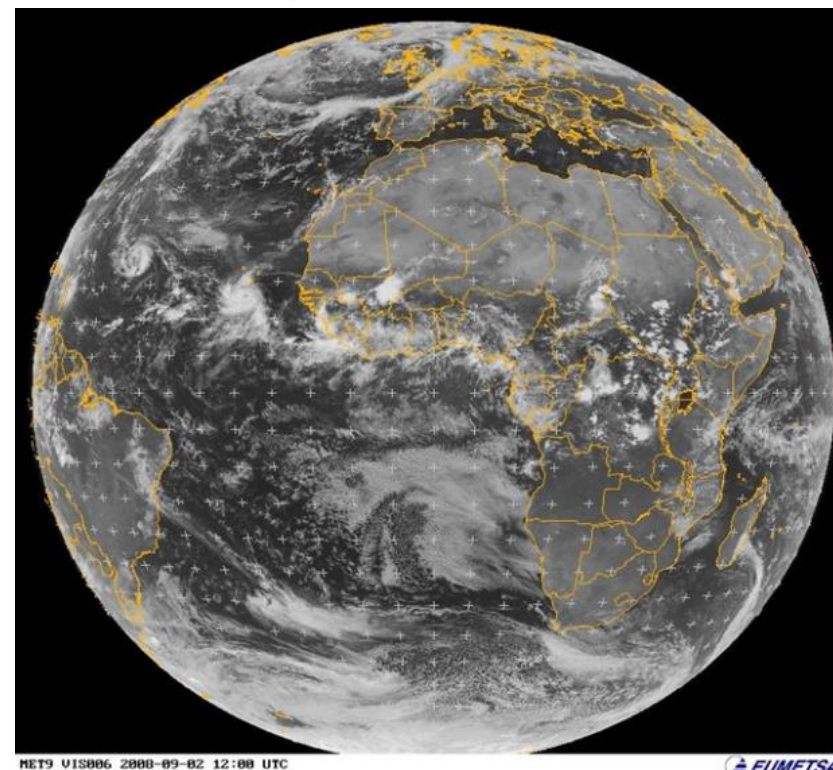
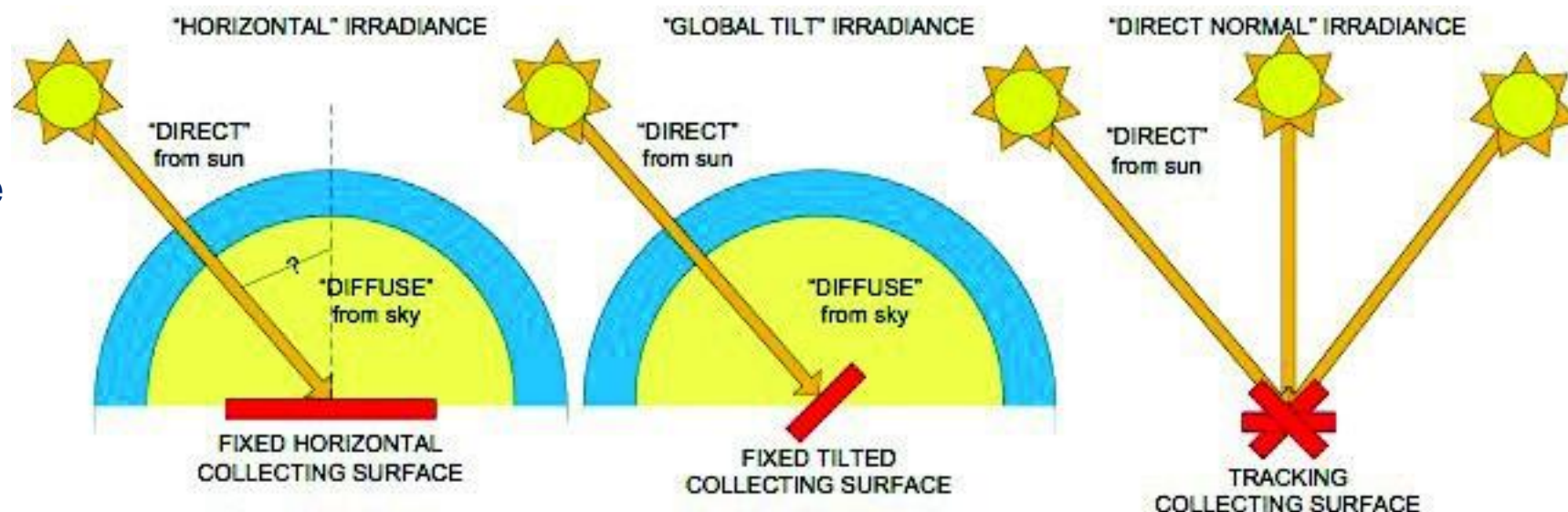**Courtesy: Jörg Trentmann, CM SAF /DWD**

Solar Radiation Parameter

Global Radiation (SIS)
Solar incoming radiation at Surface

Direct Normal Radiation (DNI)
The fraction of Global Radiation that reaches the Earth's surface directly, without being scattered by particles or clouds

"HORIZONTAL" IRRADIANCE

"DIRECT" from sun

"DIFFUSE" from sky

FIXED HORIZONTAL COLLECTING SURFACE

"GLOBAL TILT" IRRADIANCE

"DIRECT" from sun

"DIFFUSE" from sky

FIXED TILTED COLLECTING SURFACE

"DIRECT NORMAL" IRRADIANCE

"DIRECT" from sun

TRACKING COLLECTING SURFACE

Sunshine Duration (SDU)
Sunny slots / all slots during daylight * daylength

Sunny slot: DNI > 120 Wm-2
Daylength: Sun Elevation Angle > 2.5°

Questions??

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