



Presentation to EEC COST ES1002 WIRE workshop on DNI inter-comparison  
Oct 2012, at MeteoSwiss, Payerne, Switzerland

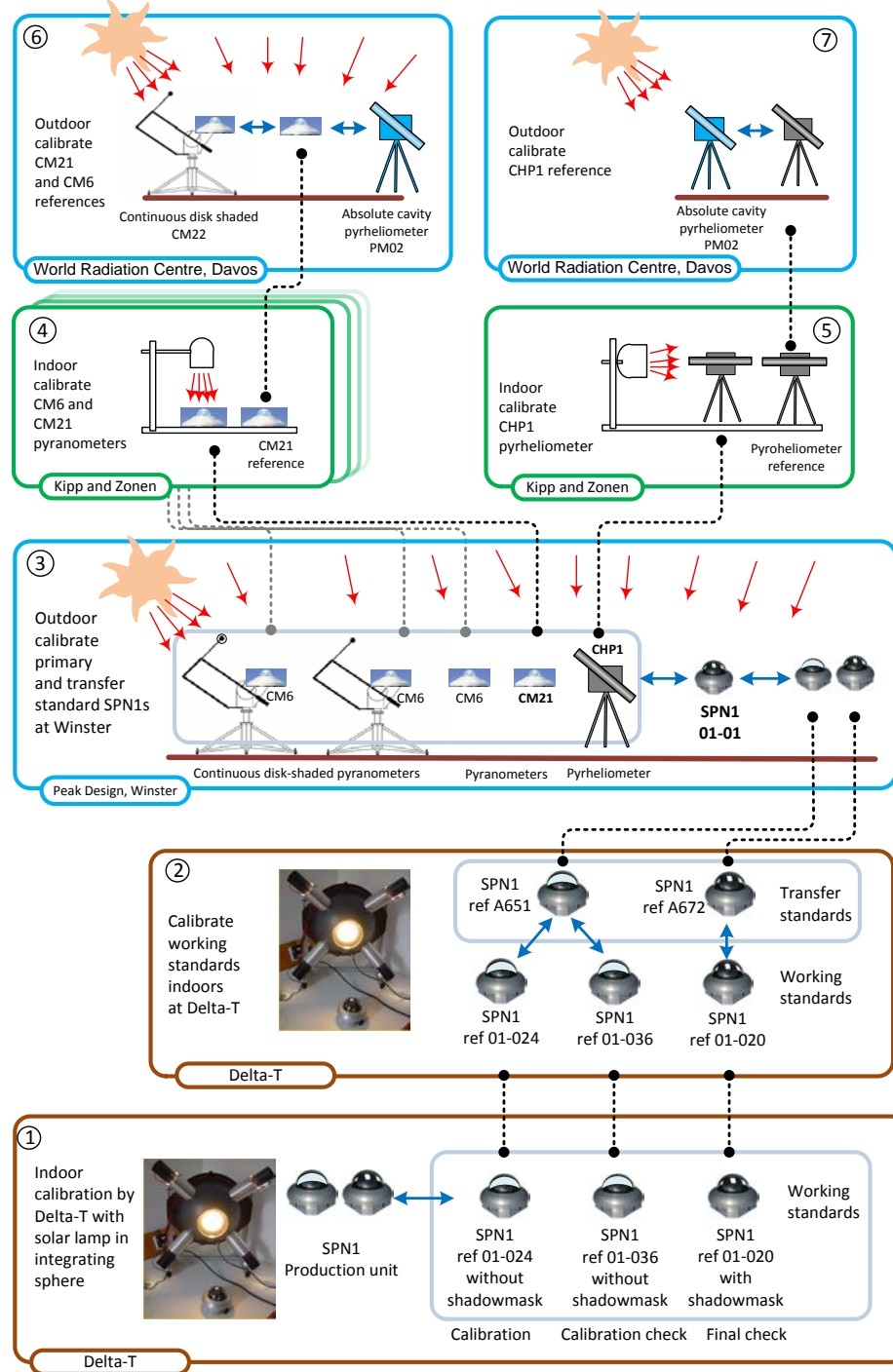
# SPN1 Calibration Chain

Oct 2012

Nick Webb

Delta-T Devices

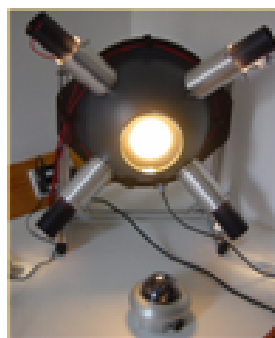






①

Indoor calibration by Delta-T with solar lamp in integrating sphere



  
SPN1  
Production unit



  
SPN1  
ref 01-024  
without  
shadowmask

Calibration

  
SPN1  
ref 01-036  
without  
shadowmask

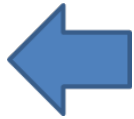
Calibration check

  
SPN1  
ref 01-020  
with  
shadowmask

Final check

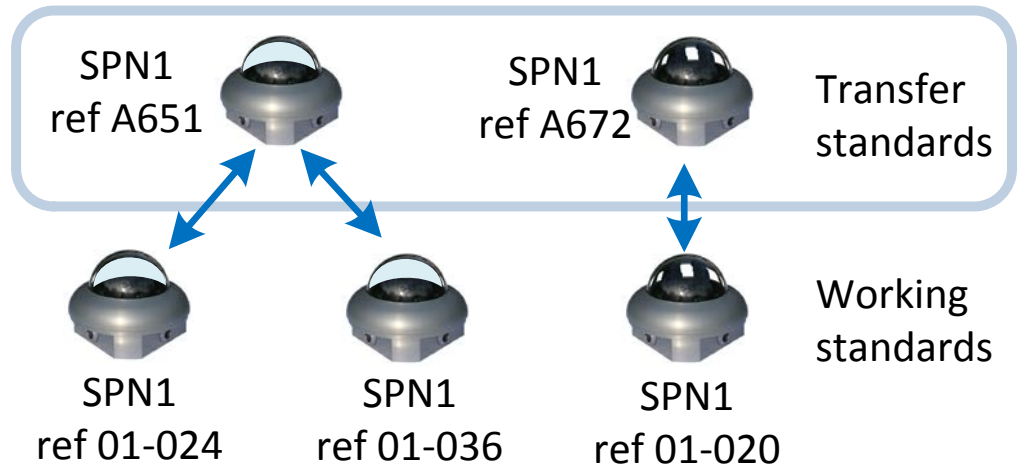
Working standards

Delta-T

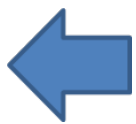


②

Calibrate working standards indoors at Delta-T

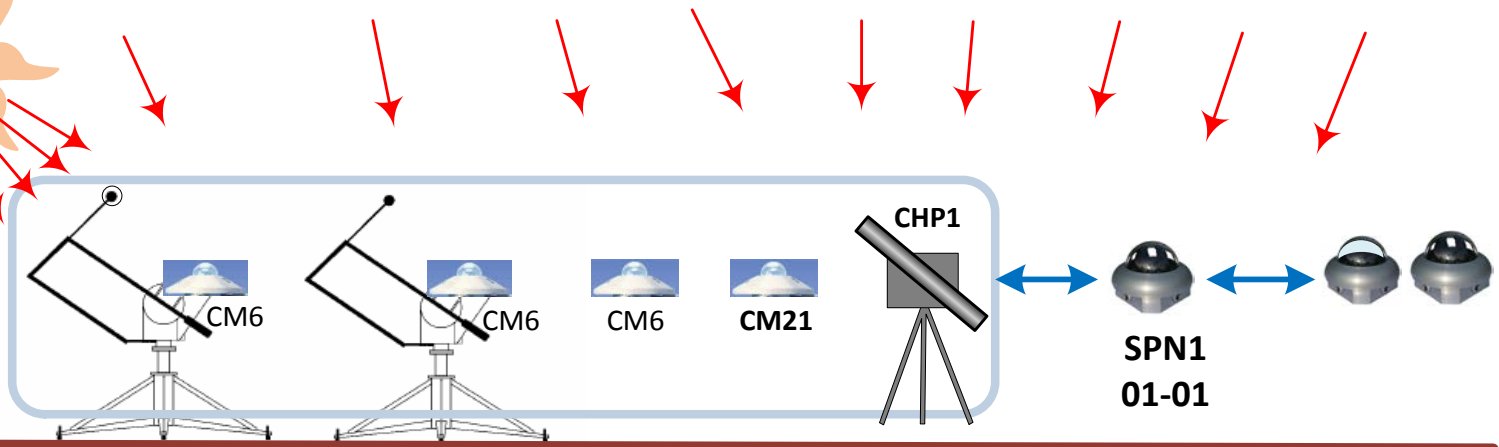
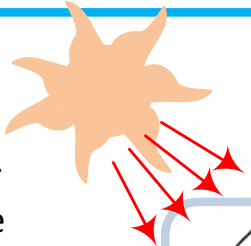


Delta-T



③

Outdoor  
calibrate  
primary  
and transfer  
standard SPN1s  
at Winstar



Continuous disk-shaded pyranometers

Pyranometers

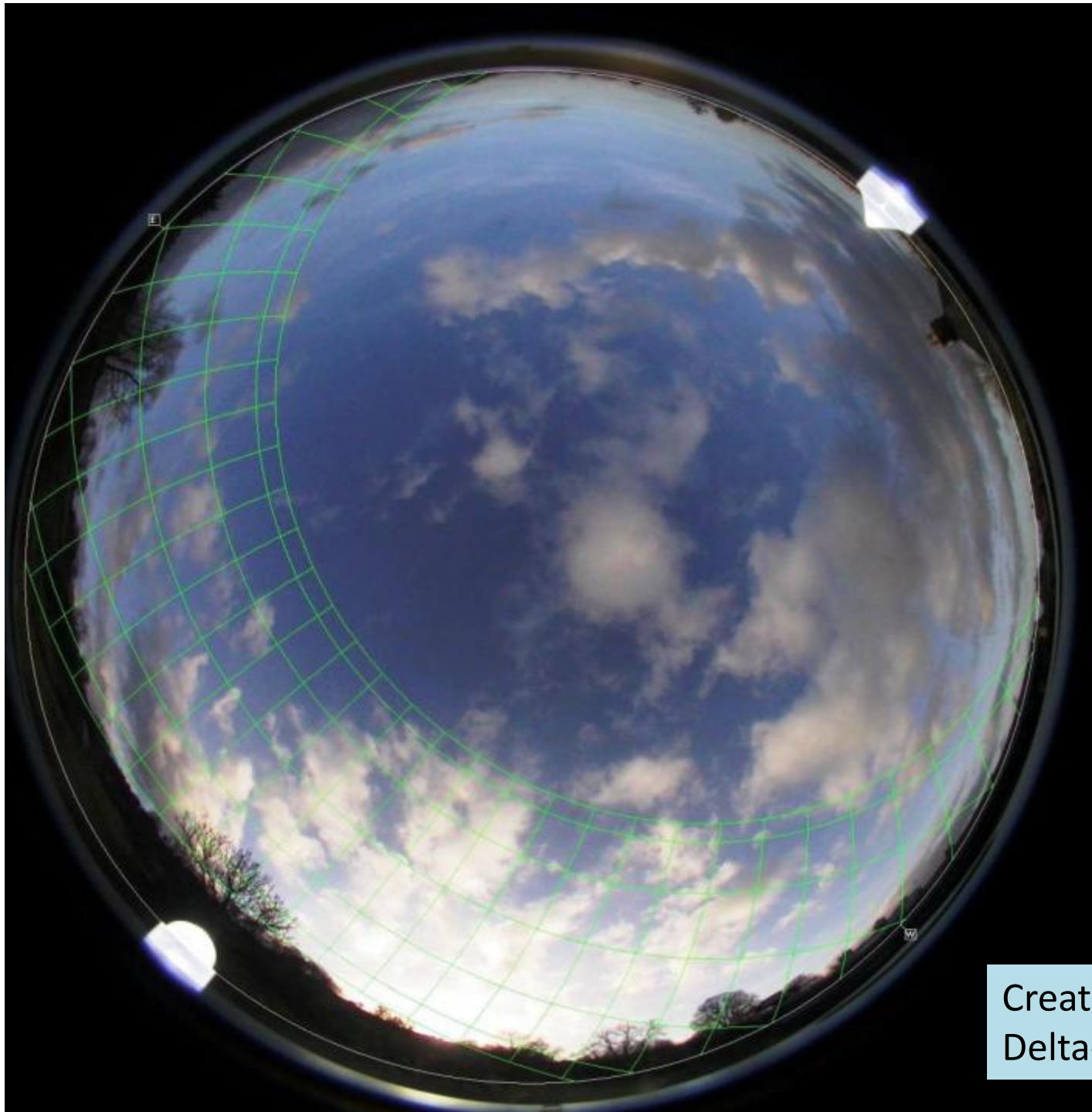
Pyrheliometer

**SPN1  
01-01**

Peak Design, Winstar



SPN1 Field calibration site at  
Peak Design, Winster. UK



Skymap  
at  
Winster

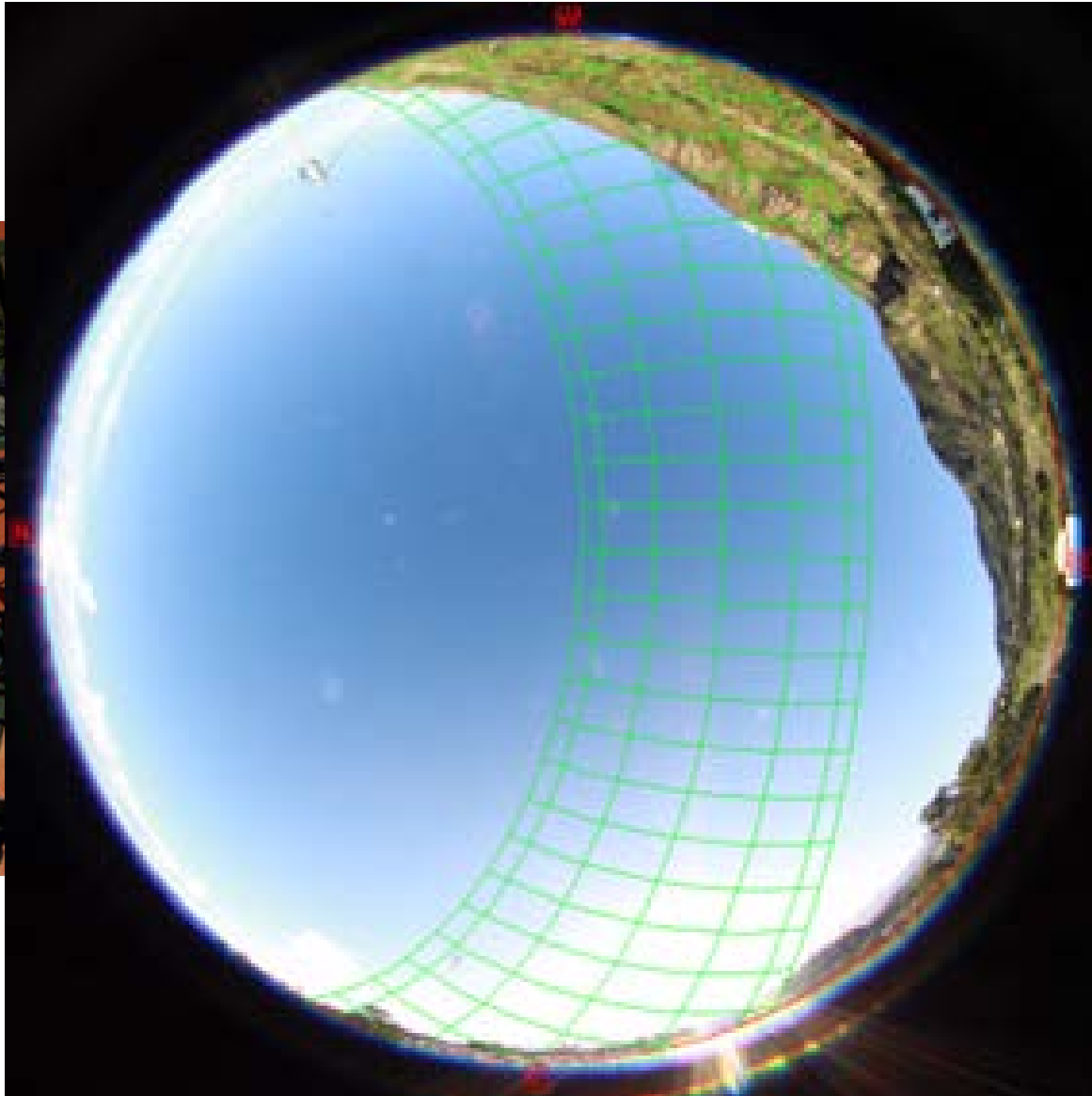
Created using  
Delta-T's *HemiView*



In the winter time we have tested Production SPN1s in Tenerife







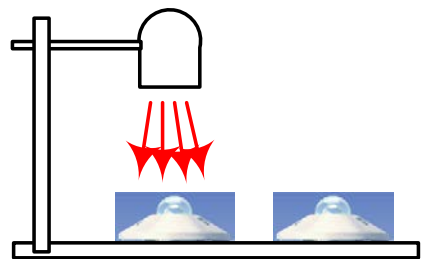
Skymap  
in  
Tenerife





④

Indoor  
calibrate  
CM6 and  
CM21  
pyranometers

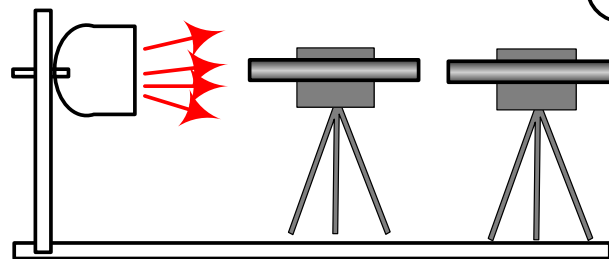


CM21  
reference

Kipp and Zonen

⑤

Indoor  
calibrate  
CHP1  
pyrheliometer



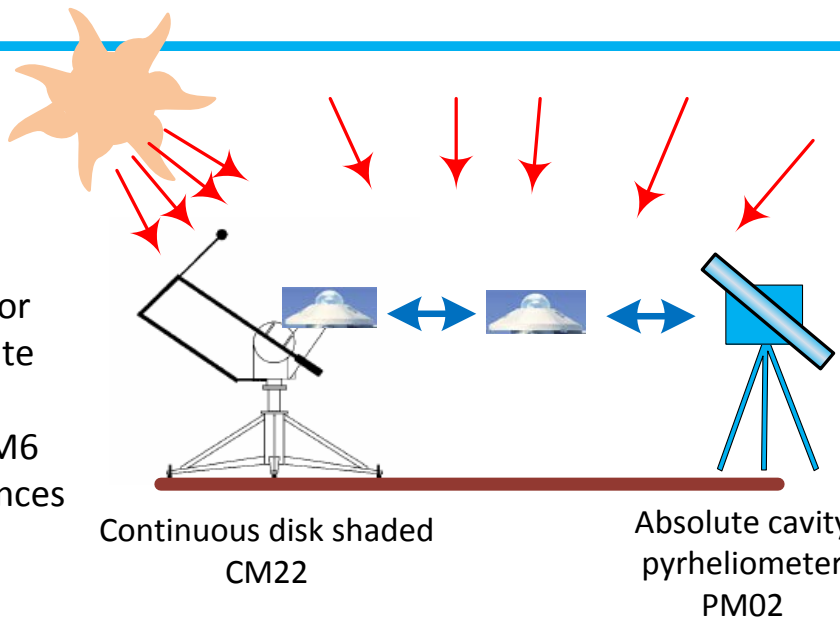
Pyroheliometer  
reference

Kipp and Zonen



⑥

Outdoor  
calibrate  
CM21  
and CM6  
references



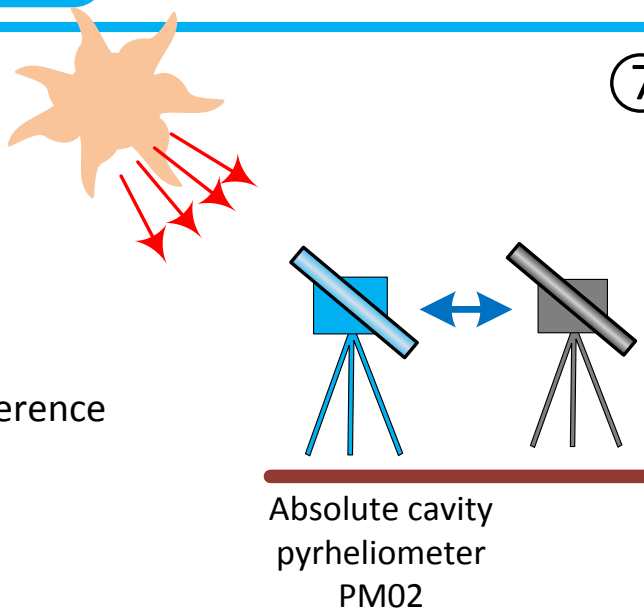
Continuous disk shaded  
CM22

Absolute cavity  
pyrheliometer  
PM02

World Radiation Centre, Davos

⑦

Outdoor  
calibrate  
CHP1 reference

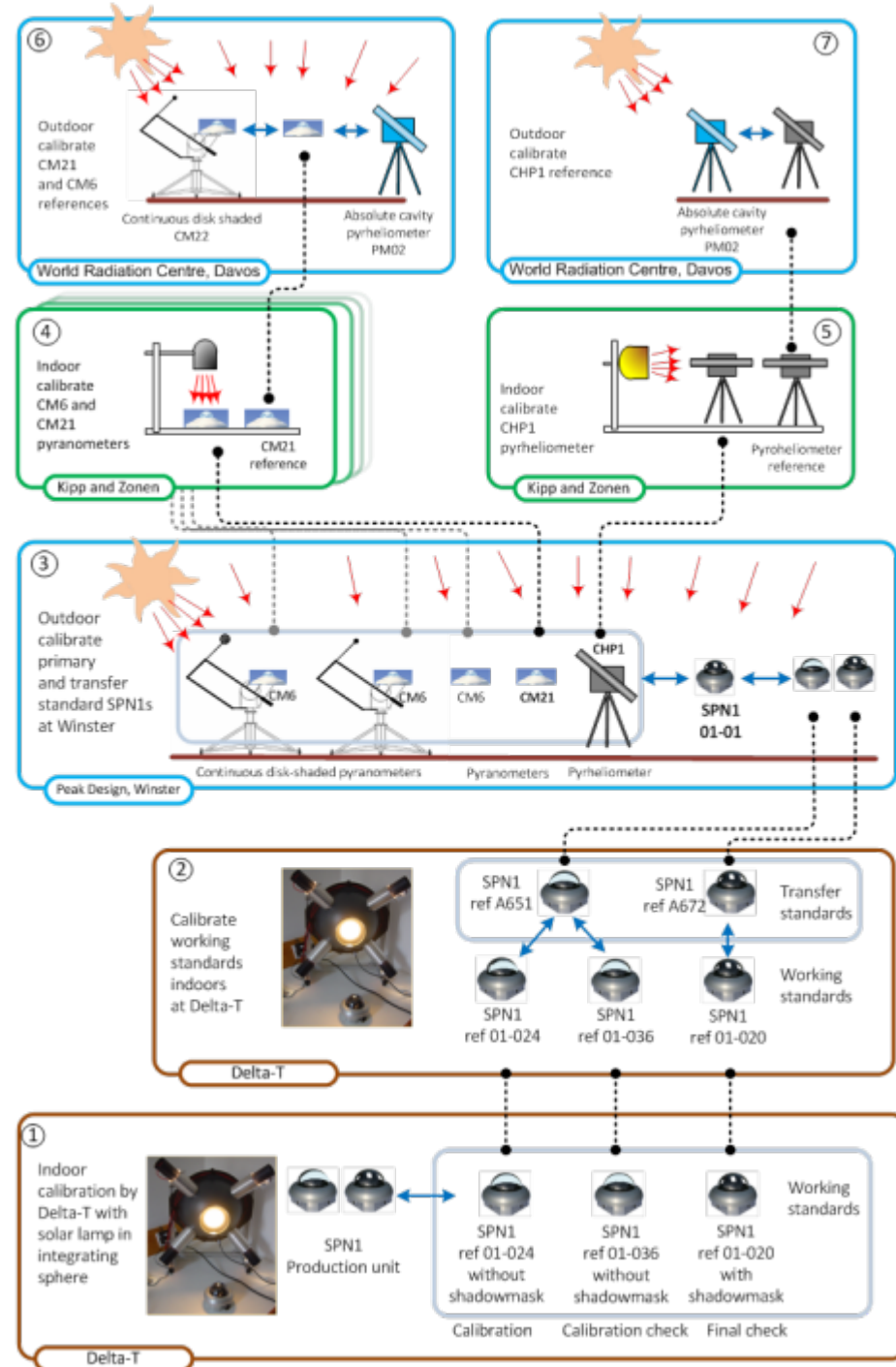


Absolute cavity  
pyrheliometer  
PM02

World Radiation Centre, Davos

# Now

- Active calibration reference chains for both Global and Diffuse





Thank you

**AT**

[www.delta-t.co.uk](http://www.delta-t.co.uk)