



World Meteorological Organization
Working together in weather, climate and water

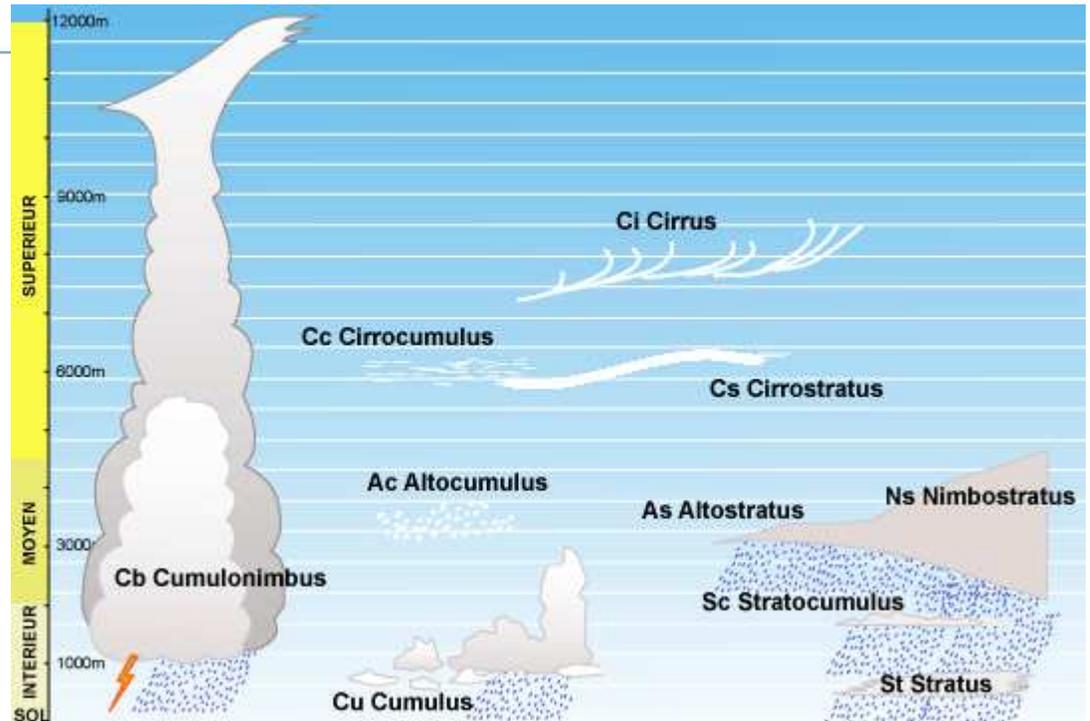
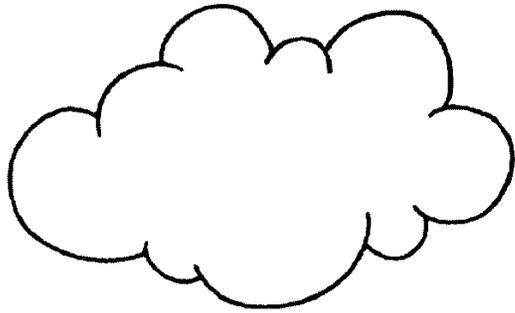
La pluie qui tombe

Comment évaluer sa quantité parmi la télédétection

J. Camacho
Scientific Officer
Agricultural Meteorology Division. CLW/CLPA



Pluie – Nuage (toujours goutelettes)



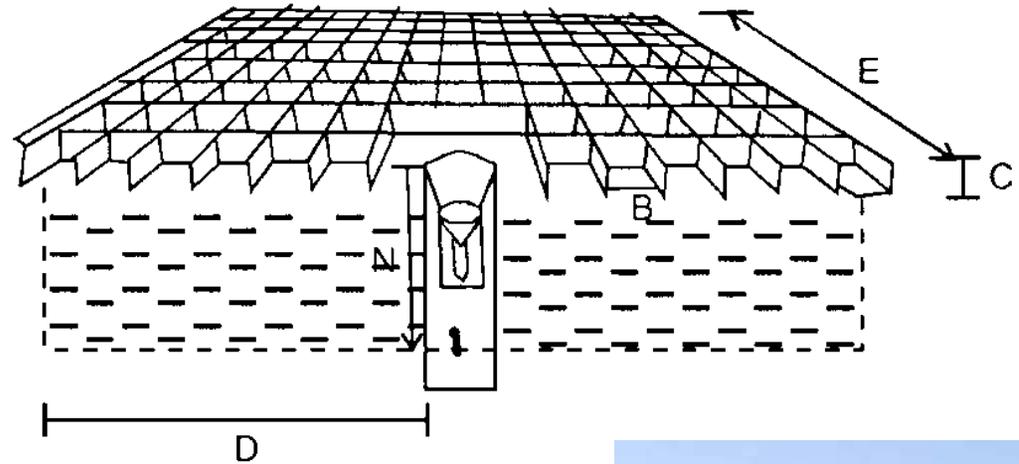
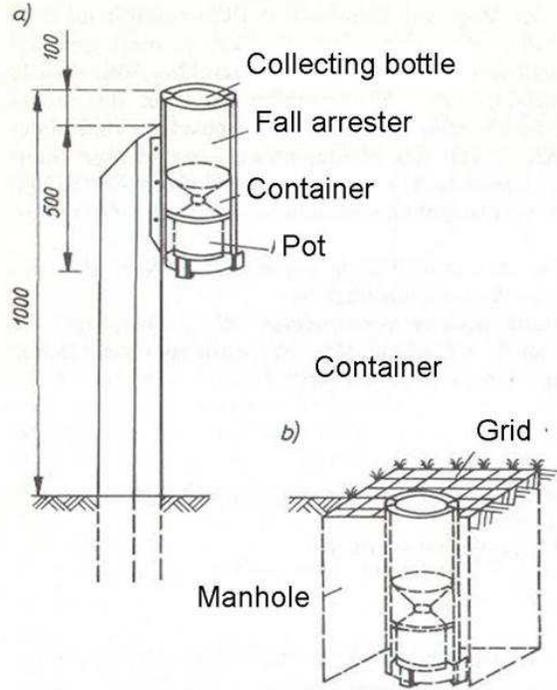


Comme mesurer le total de precipitation Instruments

- Pluviometres, seaux
- Radar meteorologique
- Satellite (passive)
- Satellite (active)



Pluviomètres

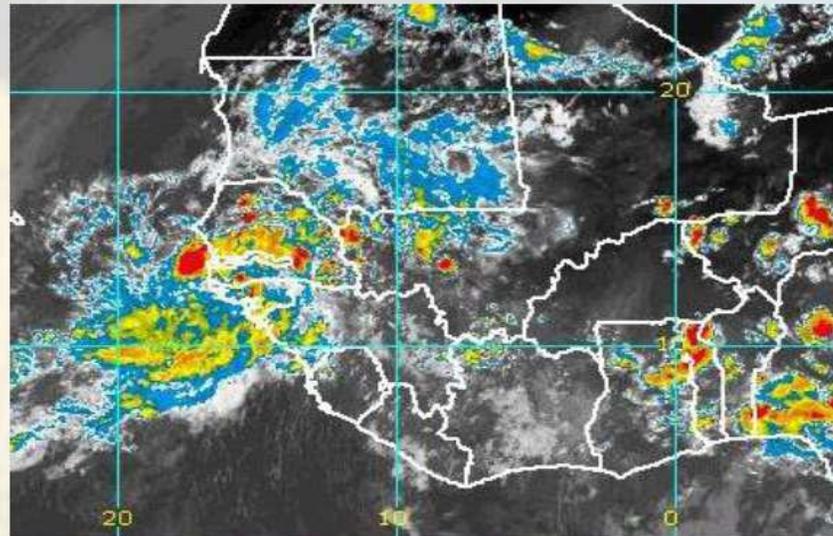




Pluviomètres. Mesurent la pluie à un point.
Qu'est-ce qu'il passe à X kilometres?

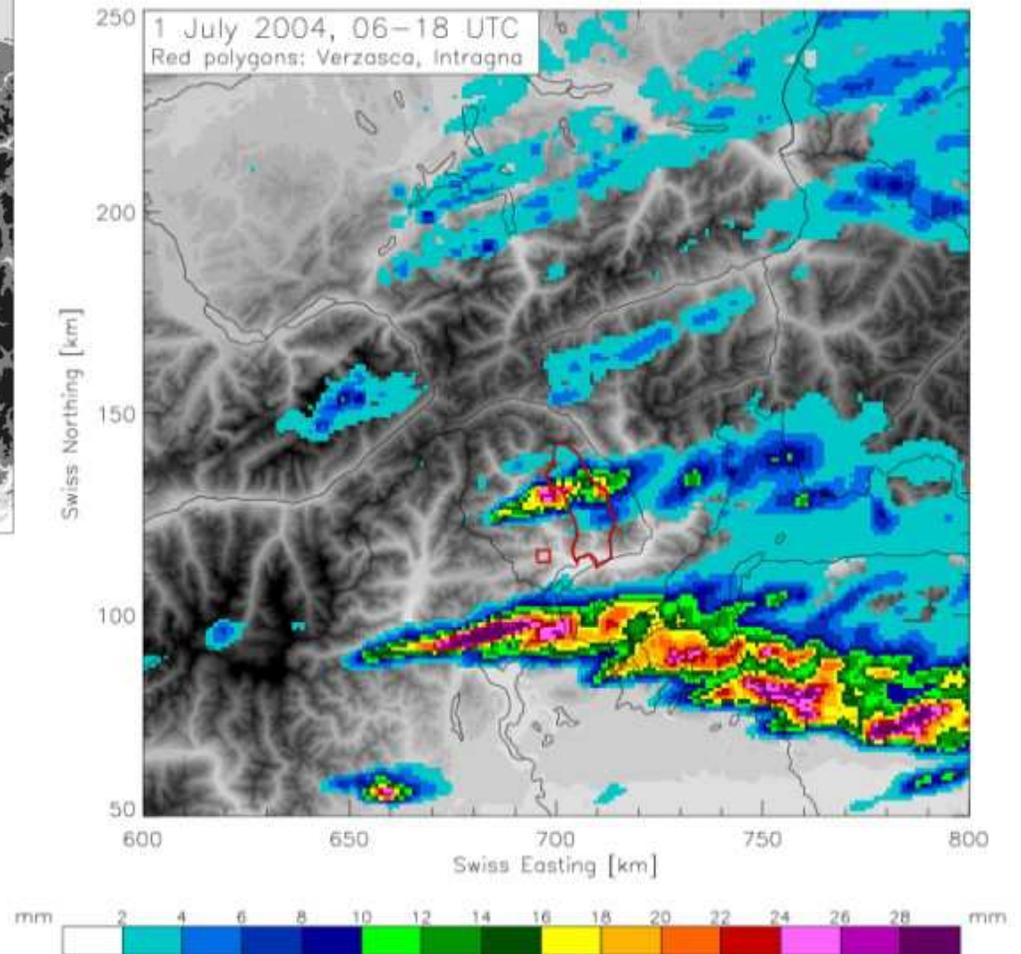
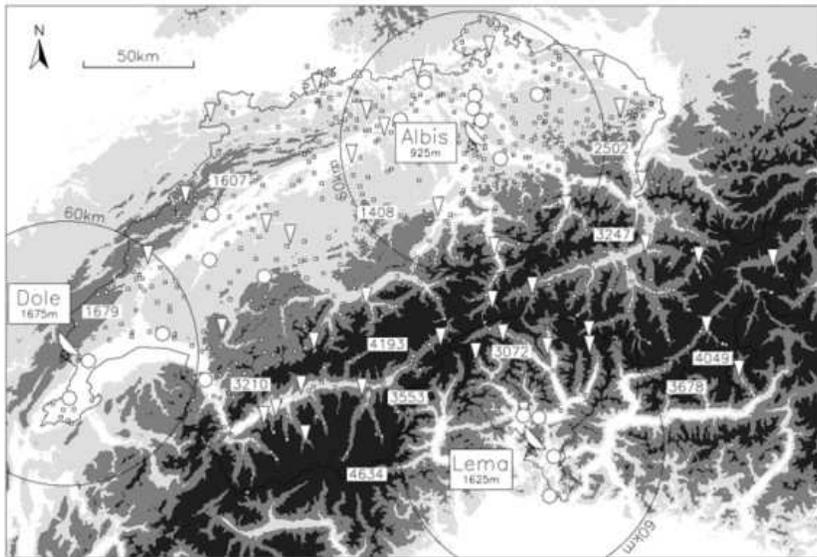
d

are spatially correlated



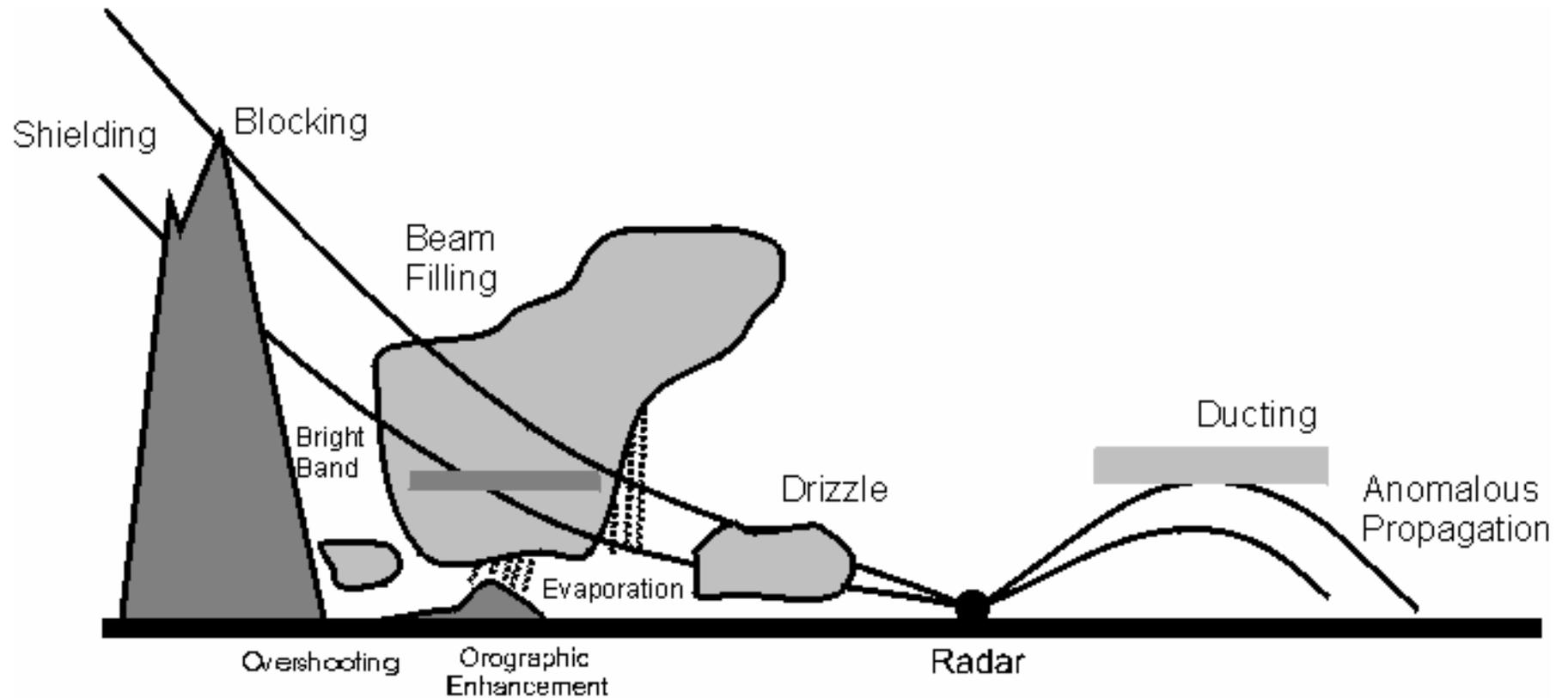


Réseau radar météorologiques (Qualité Suisse)



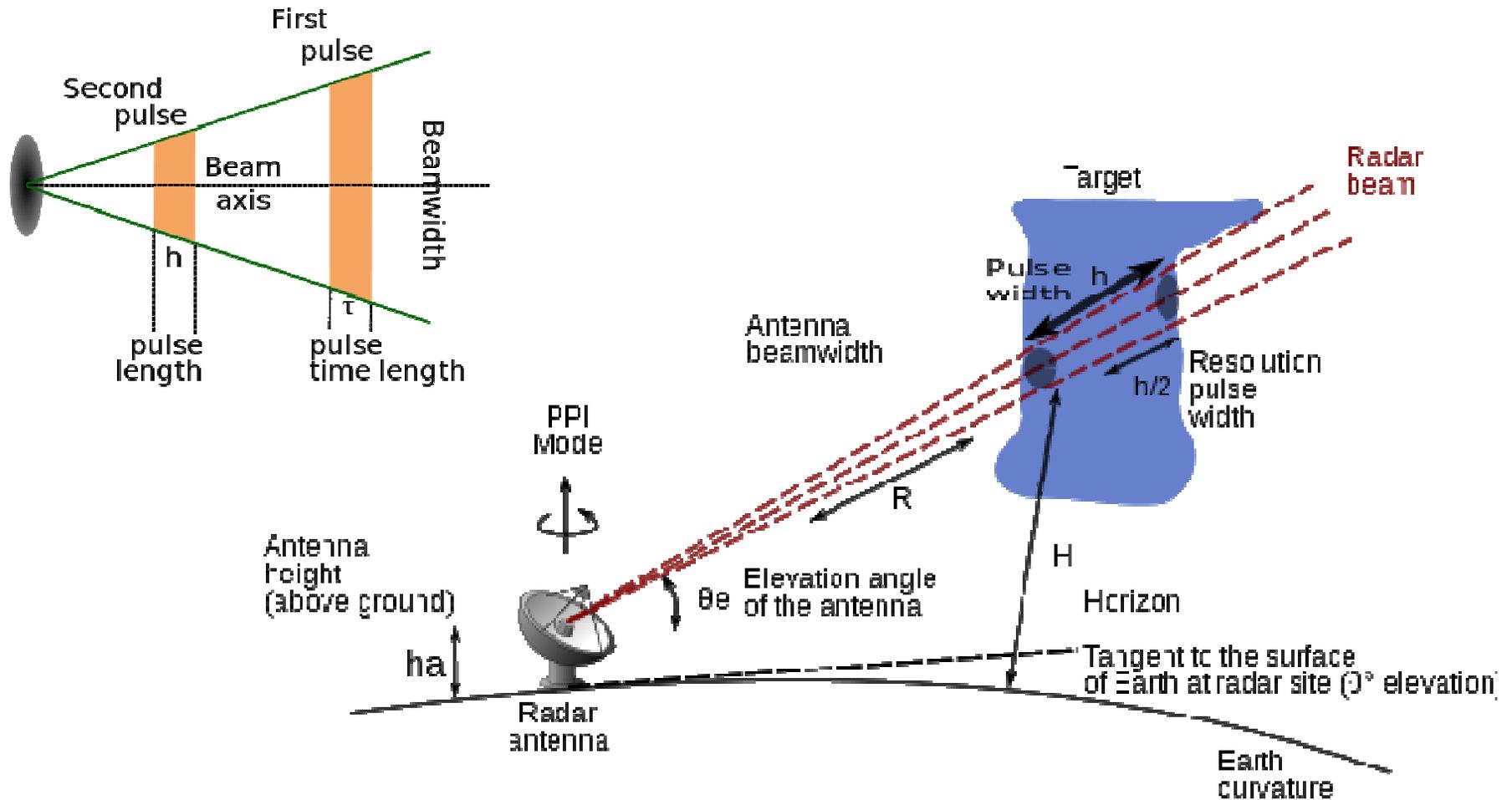


Mesure de la precipitation par radar météorologique



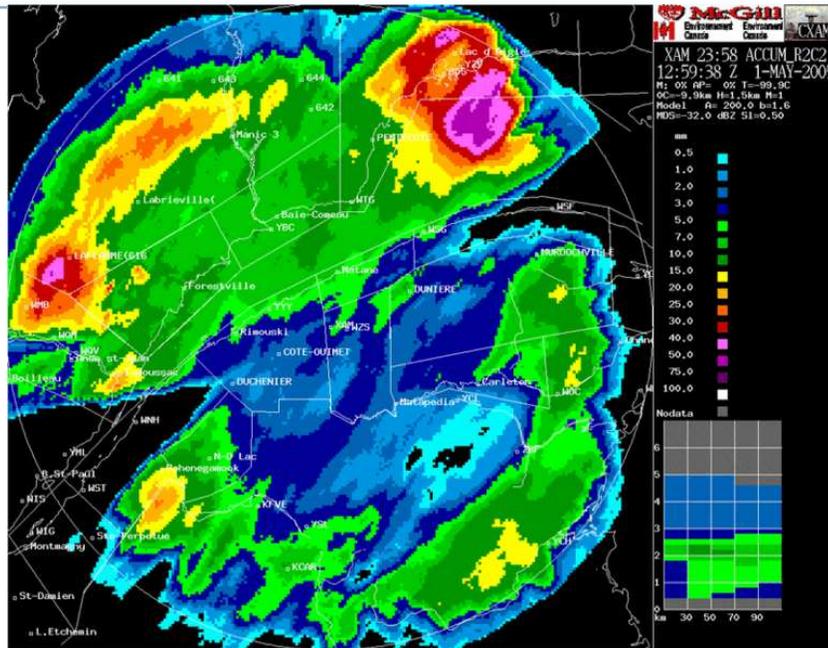


Mesure de la précipitation par radar météorologique



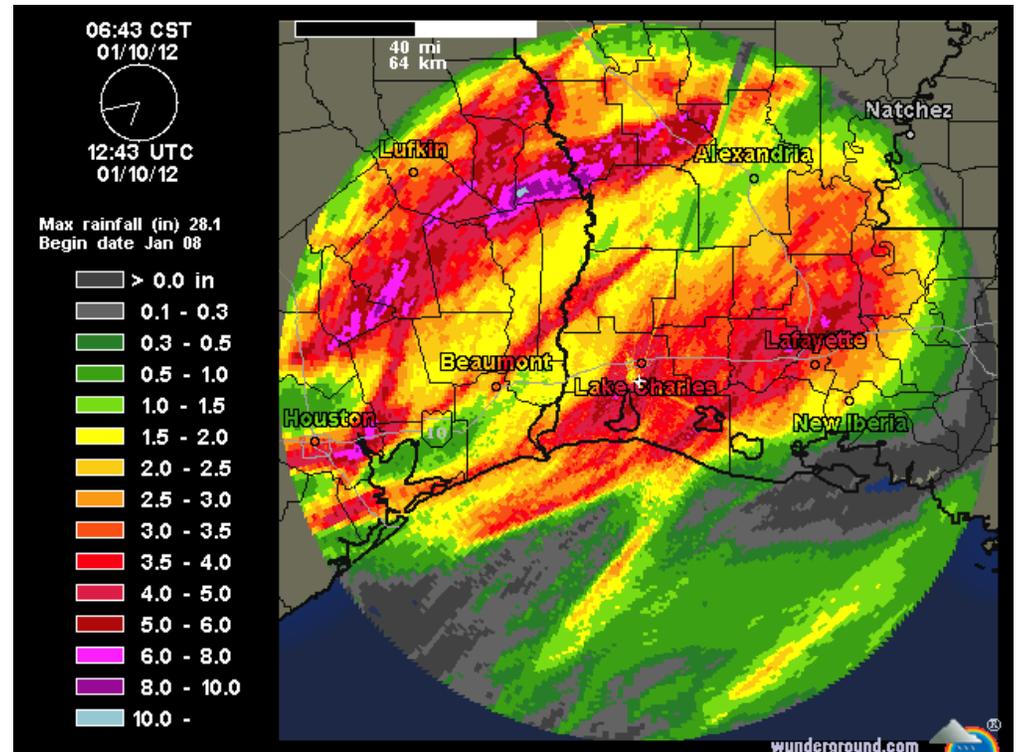


Mesure des cumuls de précipitation par radar météorologique.



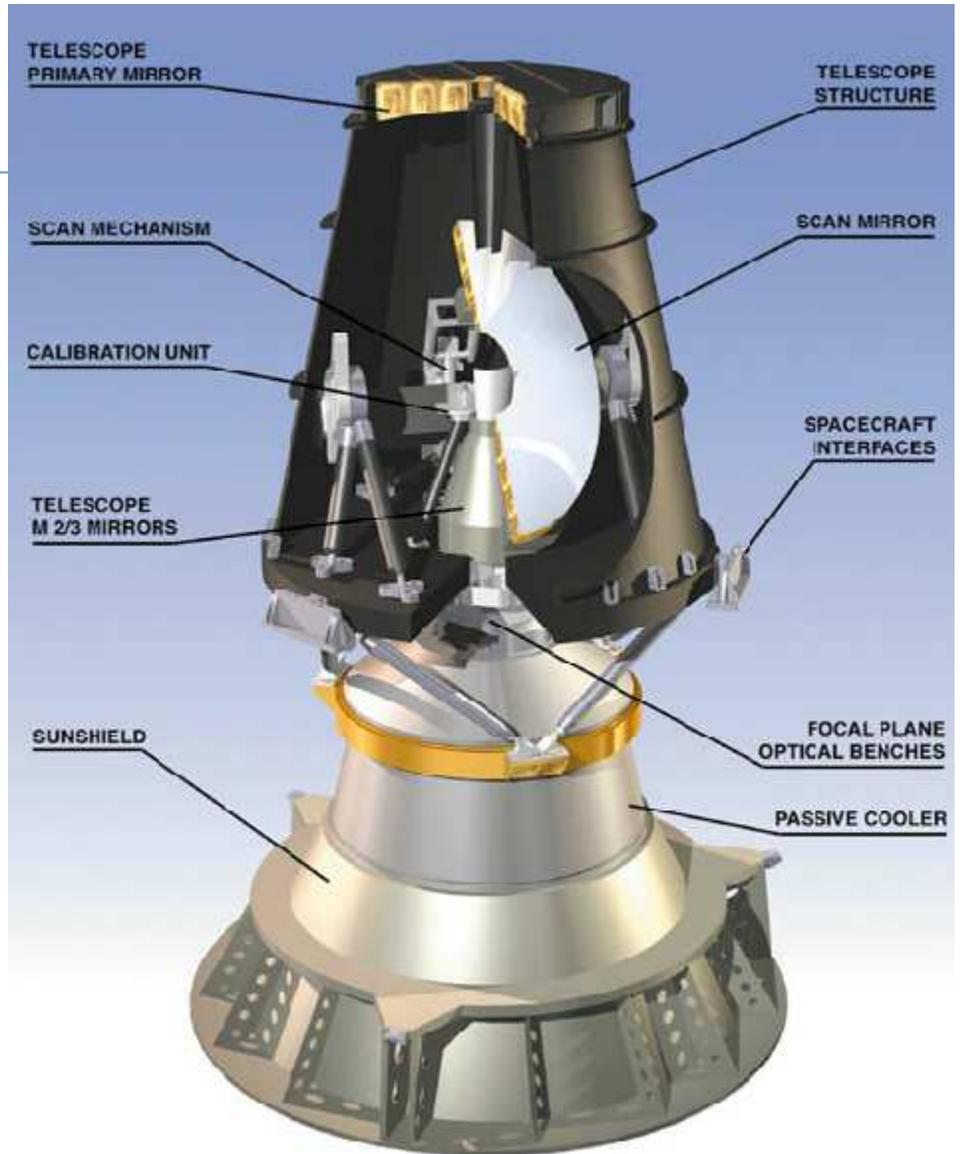
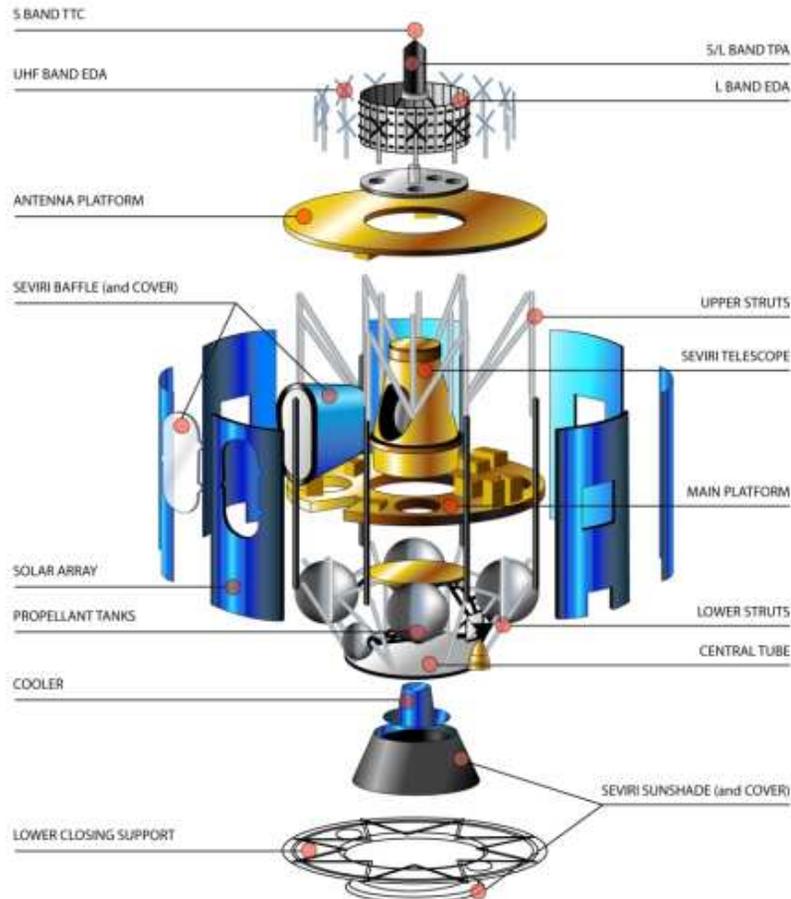
24 hours rain accumulation on the Val d'Irène radar in Eastern Canada. Notice the zones without data in the East and Southwest caused by radar beam blocking from mountains.

Radar-estimated precipitation ending Tuesday morning, January 10, 2012, shows a wide swath of 3 - 5 inches for much of Eastern Texas and Southern Louisiana.





SEVIRI - MSG



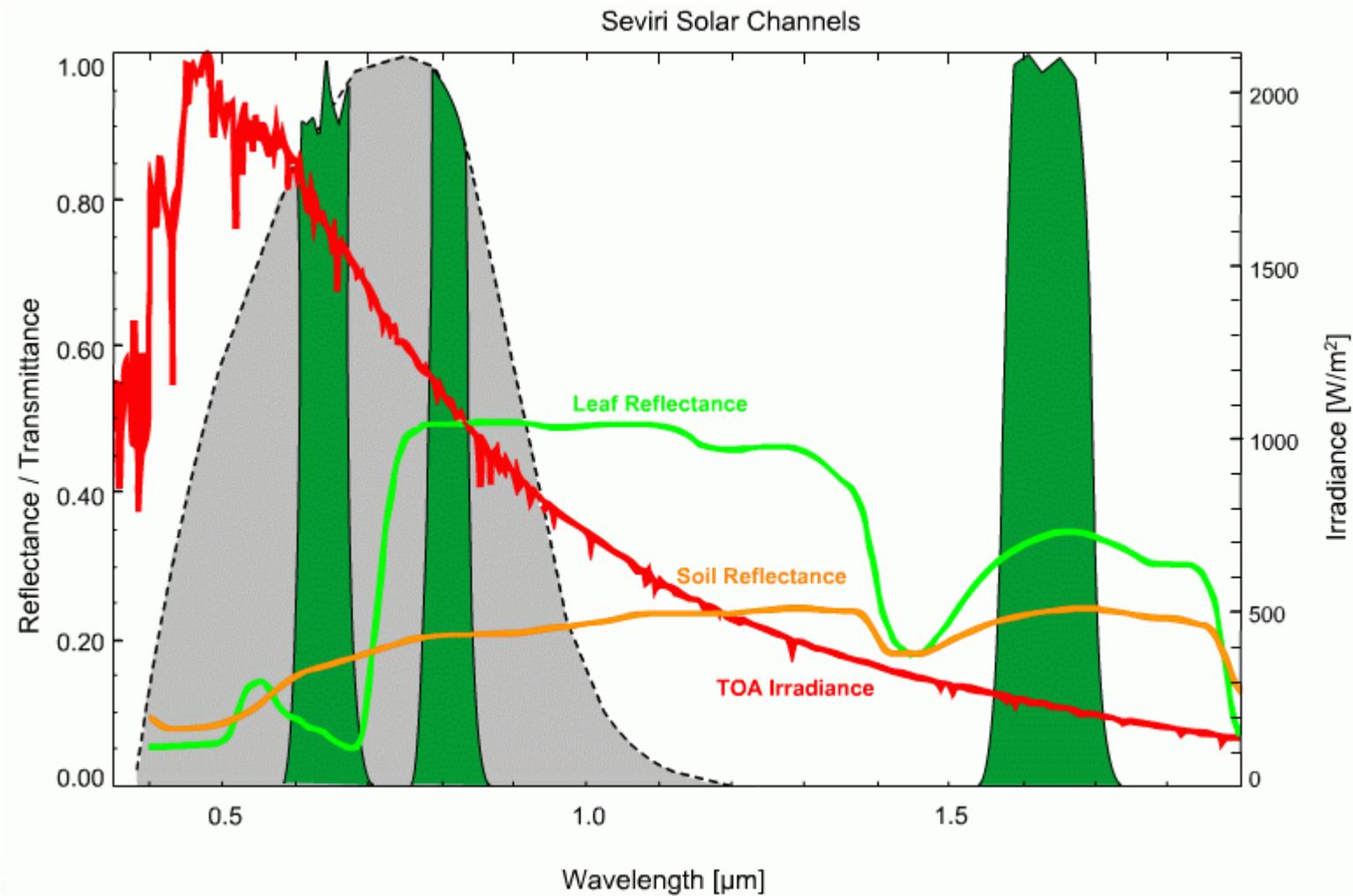


SEVIRI - MSG

Chan nel	Spectral Band (μm)	Characteristics of Spectral Band (μm)			Main observational application
		λ_{cen}	λ_{min}	λ_{max}	
1	VIS0.6	0.635	0.56	0.71	Surface, clouds, wind fields
2	VIS0.8	0.81	0.74	0.88	Surface, clouds, wind fields
3	NIR1.6	1.64	1.50	1.78	Surface, cloud phase
4	IR3.9	3.90	3.48	4.36	Surface, clouds, wind fields
5	WV6.2	6.25	5.35	7.15	Water vapor, high level clouds, atmospheric instability
6	WV7.3	7.35	6.85	7.85	Water vapor, atmospheric instability
7	IR8.7	8.70	8.30	9.1	Surface, clouds, atmospheric instability
8	IR9.7	9.66	9.38	9.94	Ozone
9	IR10.8	10.80	9.80	11.80	Surface, clouds, wind fields, atmospheric instability
10	IR12.0	12.00	11.00	13.00	Surface, clouds, atmospheric instability
11	IR13.4	13.40	12.40	14.40	Cirrus cloud height, atmospheric instability
12	HRV	Broadband (0.4 – 1.1 μm)			Surface, clouds



SEVIRI - MSG

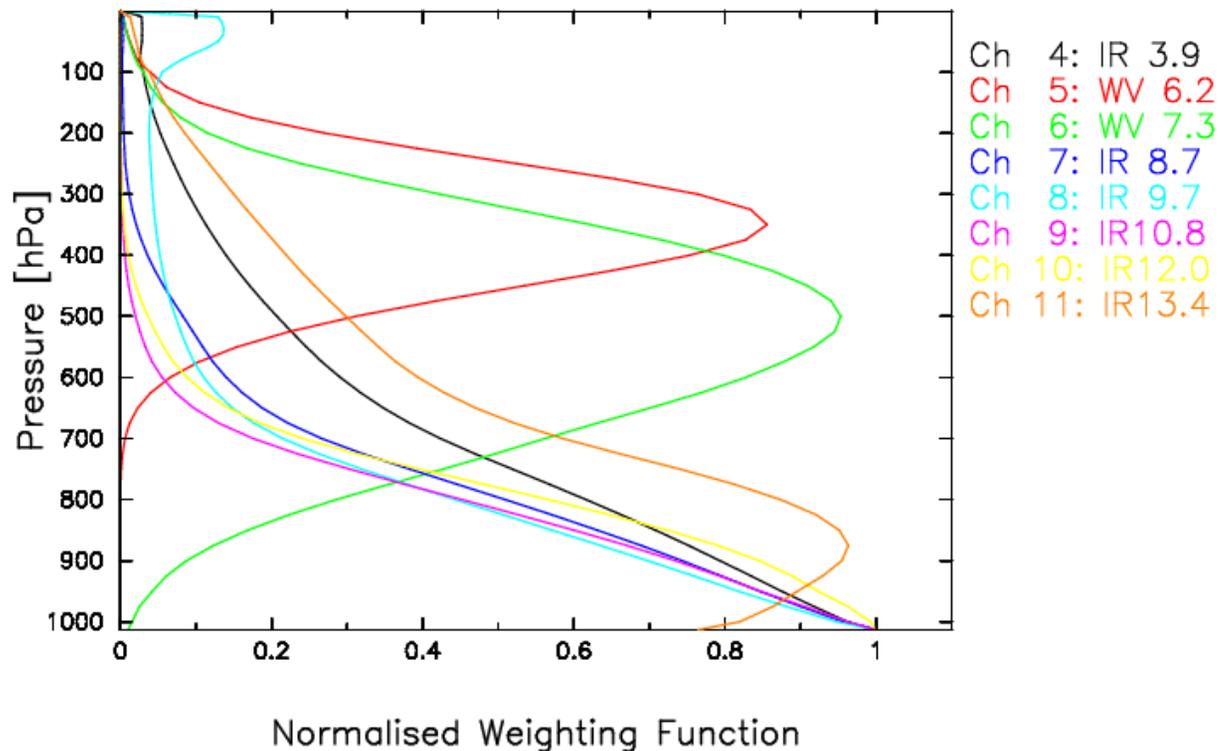




SEVIRI - MSG

Weighting functions for the MSG SEVIRI thermal channels, i.e. channels 4 to 11, for a satellite nadir view. A mid-latitude summer standard atmosphere has been assumed for the simulation with a radiative transfer model.

Standard Mid-Latitude Summer Nadir





Téledetection active (radar embarqué au satellite)



Dual-frequency Precipitation Radar (DPR) instrument (JAXA) integrated onto the GPM Core Observatory satellite on flight from February 2014. New instrument designed to take 3-D measurements of raindrops and snowflakes. Is a spaceborne precipitation radar capable of making accurate rainfall measurements. The DPR is expected to be more sensitive than its TRMM predecessor especially in the measurement of light rainfall and snowfall in high latitude regions. Rain/snow determination is expected to be accomplished by using the differential attenuation between the Ku-band and the Ka-band frequencies. The variable pulse repetition frequency (VPRF) technique is also expected to increase the number of samples at each IFOV to realize a 0.2 mm/h sensitivity. The KuPR and KaPR, together with GMI, are the primary instruments on the GPM spacecraft. These Earth-pointing KuPR and KaPR instruments will provide rain sensing over both land and ocean, both day and night.

Cours applications teledetection en meteorologie agricole, Ouagadougou, Burkina Faso 5-9 Mai 2013



Pluviomètres simples





Merci !



Cours applications télédétection en météorologie agricole, Ouagadougou, Burkina Faso 5-9 Mai 2013