



# Neraca Energi

Klimatologi

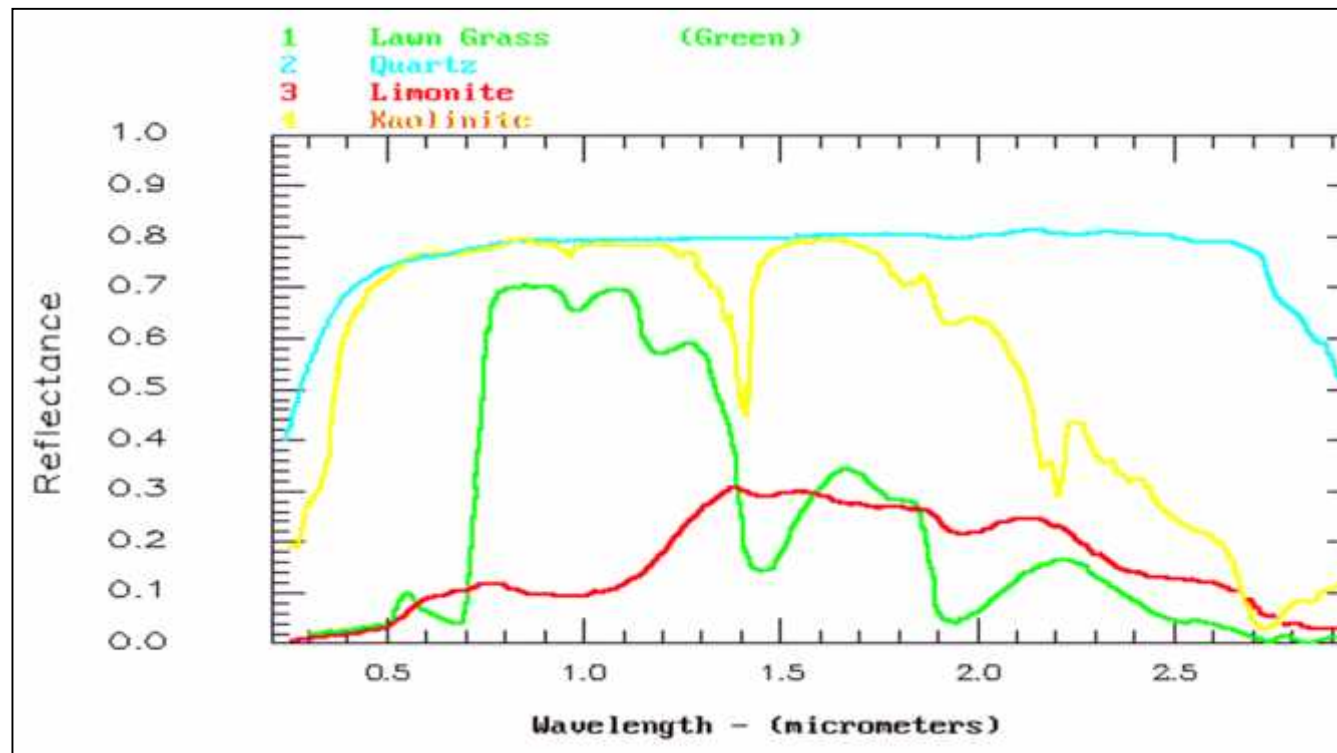


Meteorology for better life

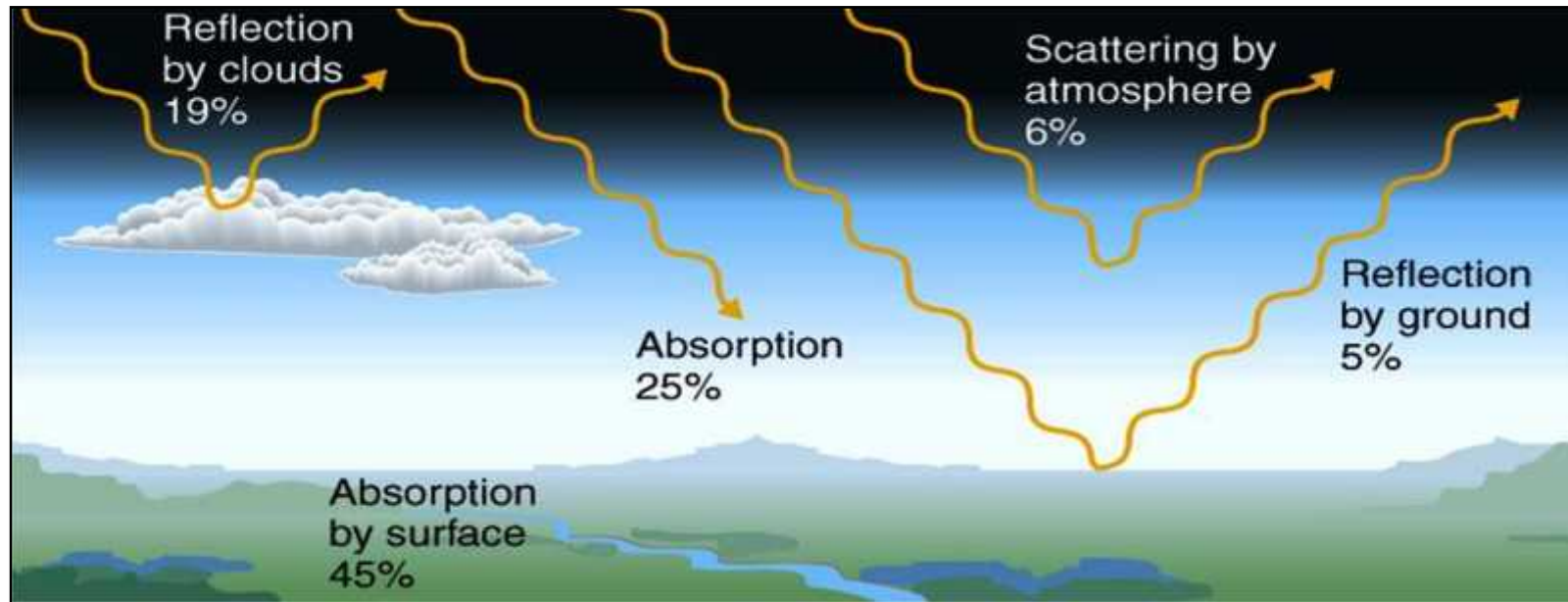
<http://geomet.ipb.ac.id>

# Neraca energi permukaan

- $Q_{\text{netto}} = Q_{\text{sw}} + Q_{\text{lw}} - Q_{\text{sw}} - Q_{\text{lw}}$ 
  - Albedo > nisbah  $Q_{\text{sw}} : Q_{\text{sw}}$  ---> (albedo)
  - Pendugaan energi pancaran permukaan bumi
- $Q_{\text{lw}} = T^4(0.56-0.079 e_a^{1/2})(0.1+0.9 n/N)$  Brunt (1932) > turunan Hk. Stefan Boltzman
- $Q_{\text{netto}} = Q_{\text{sw}} (1 - \text{albedo}) - Q_{\text{lw}}$

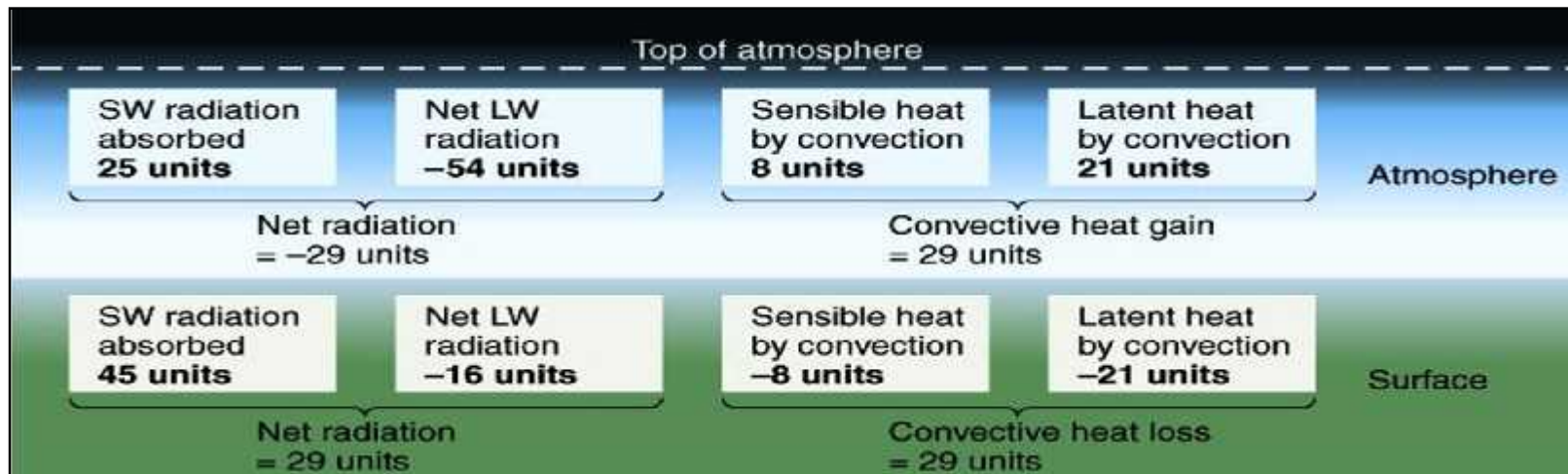




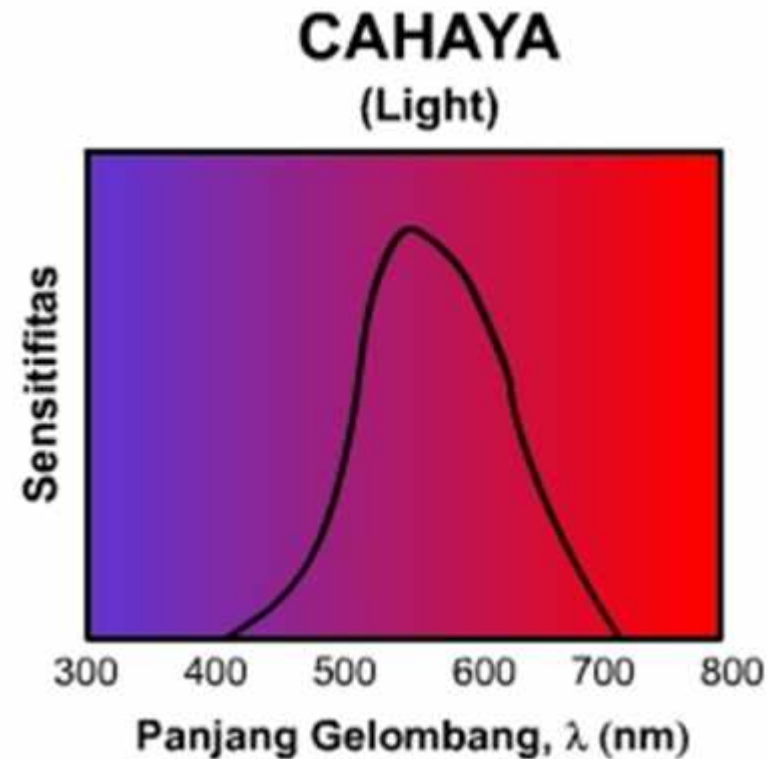
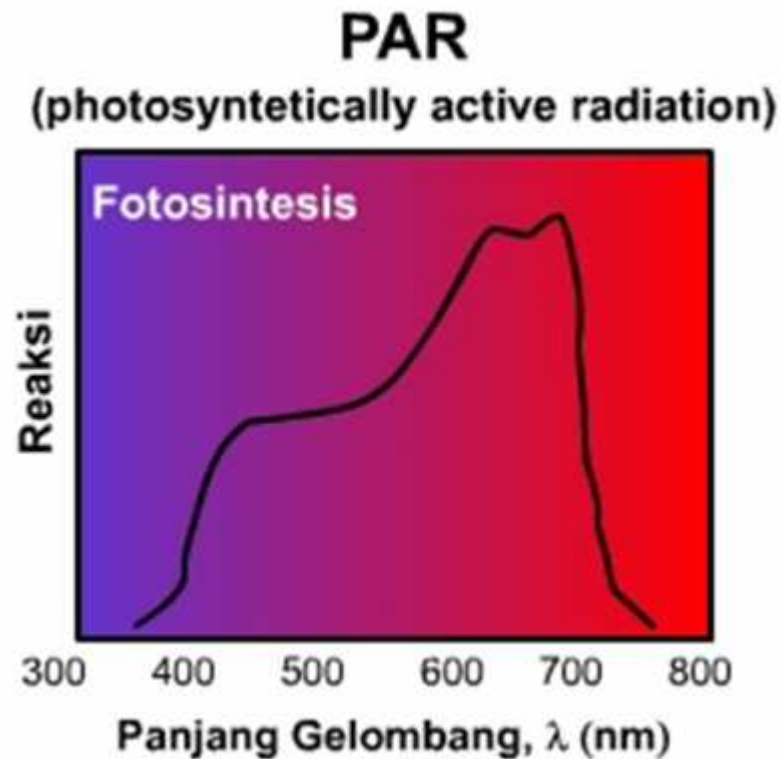


### Partisi Energi

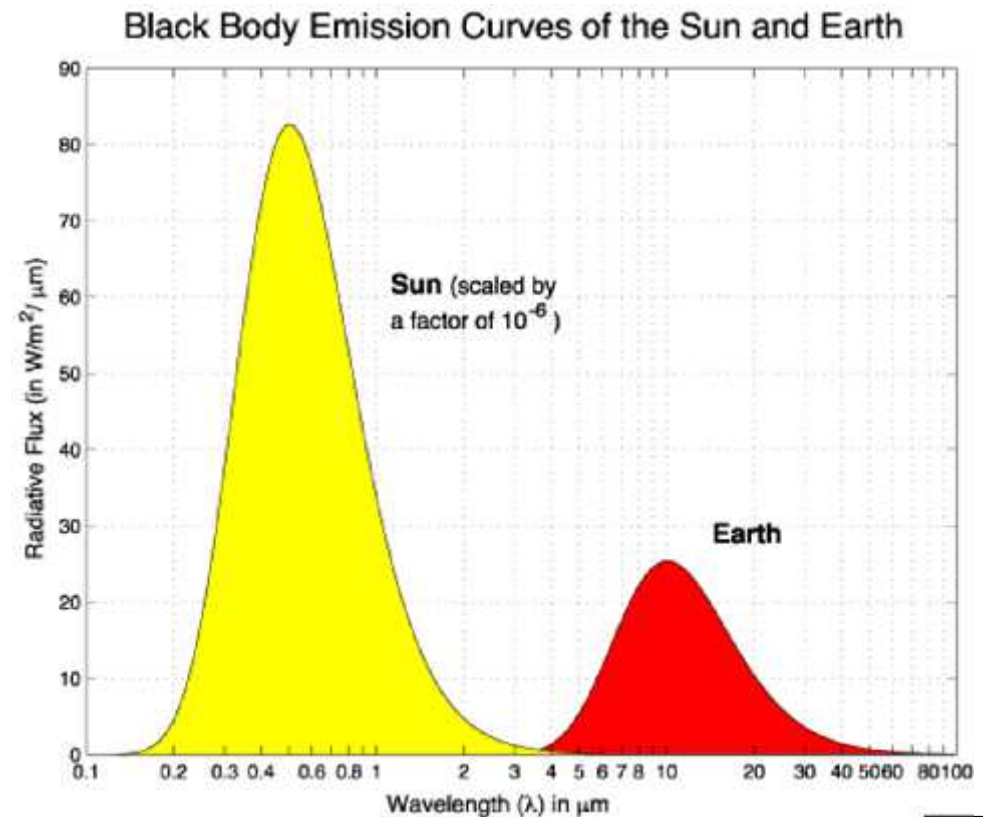
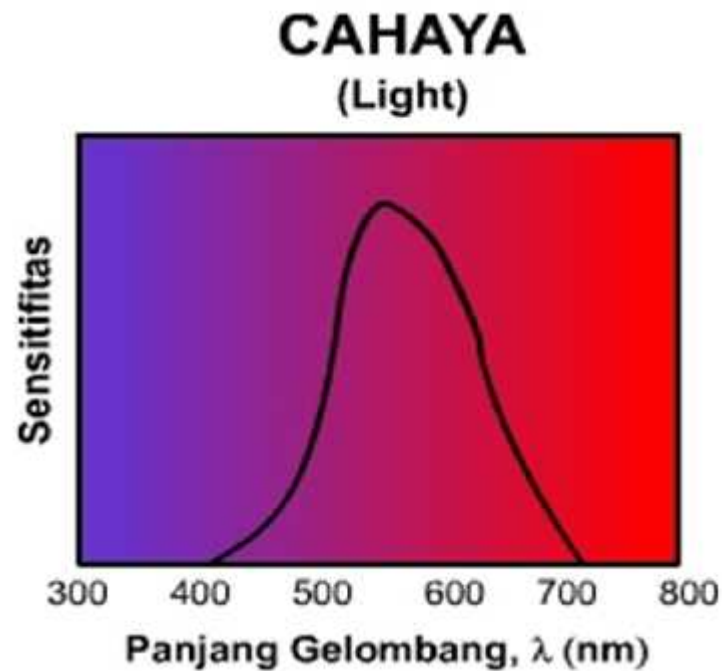
$$Q_{\text{netto}} = H + LE + G + P \quad \text{tdk ada adveksi}$$



- Cahaya  $\neq$  PAR (photosynthetically active radiation)



- Cahaya (light) adalah energi pancaran yang kasat mata
- energi cahaya  $\sim 50\%$  dari energi  $Q_{SW}$

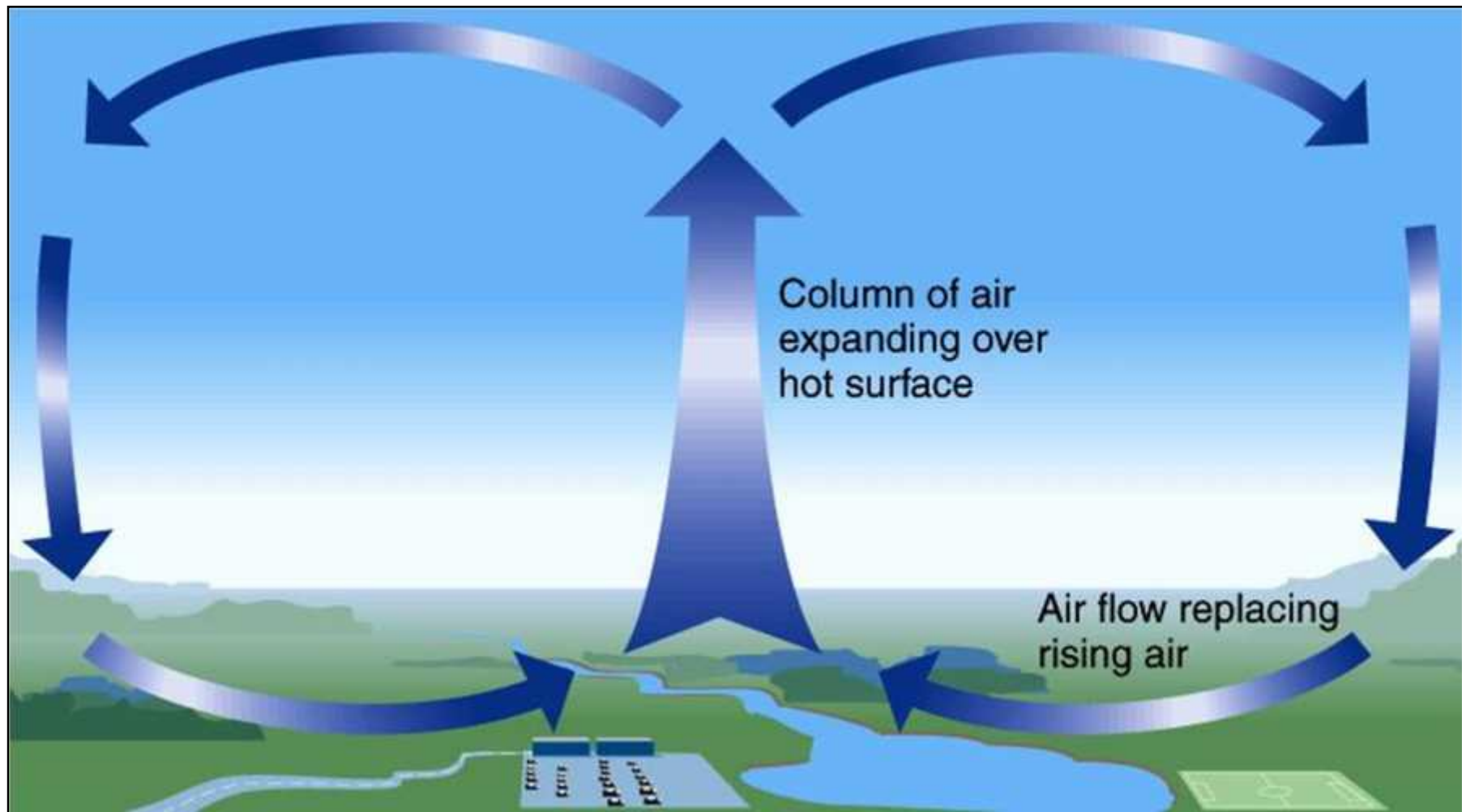


- proses fotosintesa memanfaatkan foton yg biasa disebut sbg photosyntetic photon flux density (PPFD) atau photosyntetically active radiation (PAR)
  - Satuan  $\mu\text{mol quanta}/\text{m}^2/\text{dtk}$  atau  $\mu\text{mol}/\text{m}^2/\text{dtk}$
- $Q_{\text{netto}} \sim$  perhitungan2 proses fisik atmsfer
- Cahaya, PAR,  $Q_{\text{sw}}$   $\sim$  fotosintesa, prod. berat kering, produktivitas



- $Q_{\text{netto}} \sim$  perhitungan2 proses fisik atmsfer
- Cahaya, PAR,  $Q_{\text{sw}}$   $\sim$  fotosintesa, prod. berat kering, produktivitas







Departemen Geofisika dan Meteorologi,  
Gedung FMIPA Wing 19 Level 4  
Kampus IPB Darmaga, Bogor – Indonesia  
0251-8623850 - <http://geomet.ipb.ac.id>



**TERIMA KASIH**

