# Investigating surfaces of earth-like exoplanets via scattered light

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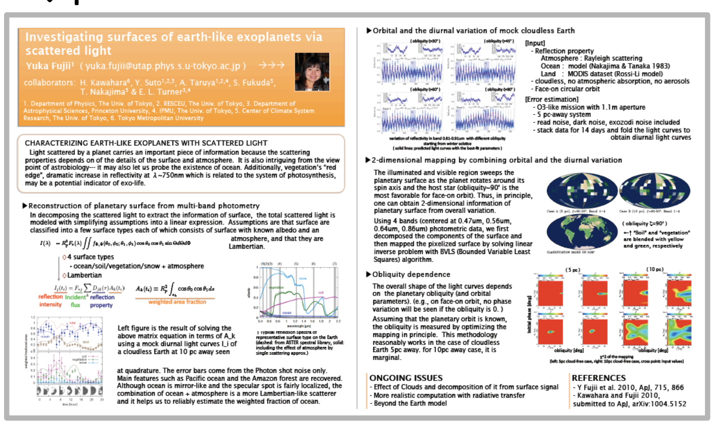
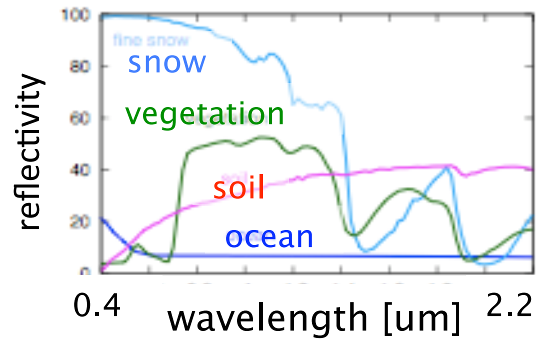
↓poster




## Multi-band scattered light



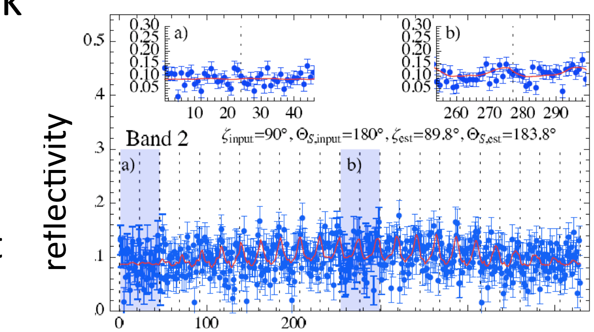

←Typical reflection spectra

ocean : Mclinden et al. 1997
others: from ASTER spectral library

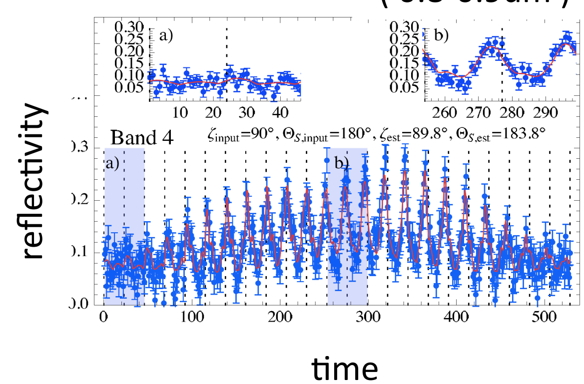
An example of mock light curves of a cloudless Earth

-band 0.8-0.9um
-face-on circular orbit
-5pc away
-starting from winter solstice
-obliquity:90°

( 0.5-0.6um )




( 0.8-0.9um )



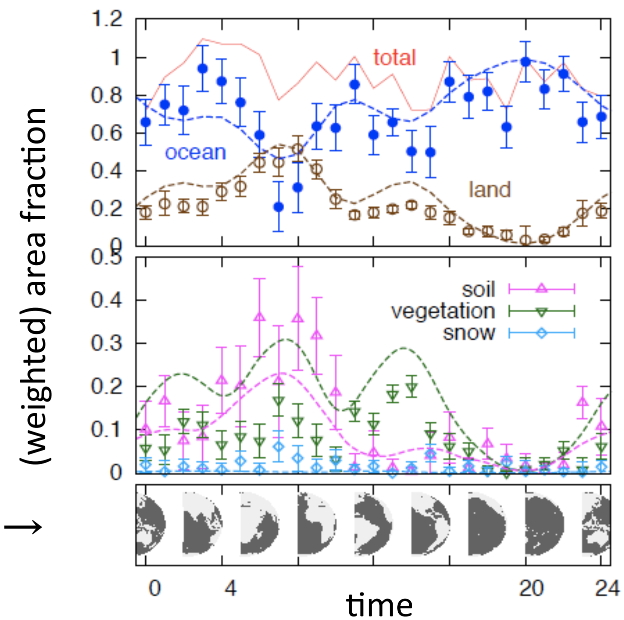
# Reconstructing the planetary surface

Model : $I_j(t_i) = F_{*j} \sum_k D_{jk}(\tau) A_k(t_i)$

reflection intensity | Incident flux | reflection property | weighted area fraction

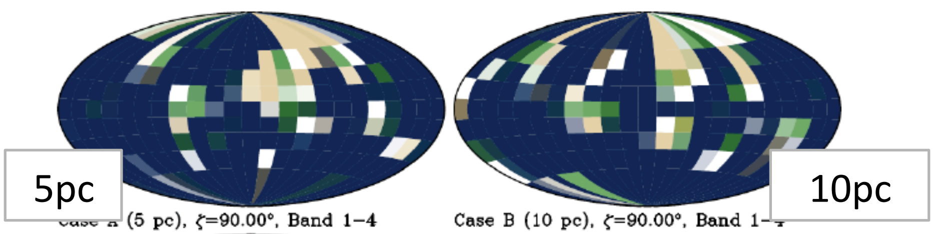
atmos + (snow/soil/vegetation/ocean)

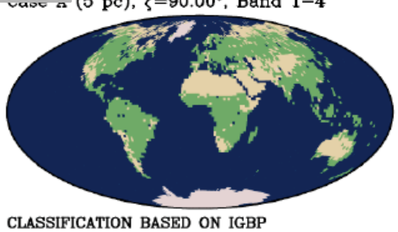
Reconstruction from a diurnal light curves of a cloudless Earth at 10 pc away seen at quadrature →



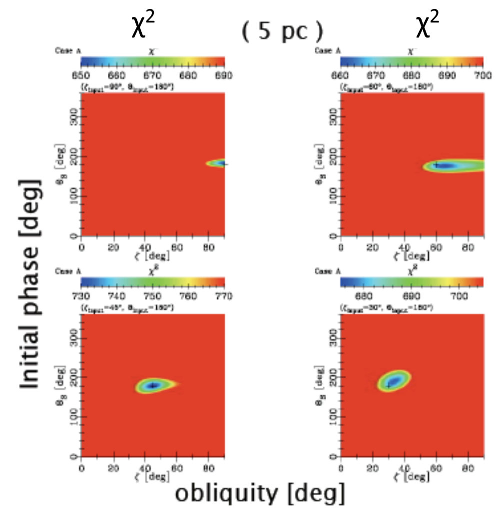

▶By combining the diurnal and yearly variation, 2-dimentional map can be derived

( obliquity = 90° case )




←↑ "Soil" and "vegetation" are blended with yellow and green, respectively




estimation of obliquity by minimizing $\chi^2$ of mapping (cross point: input values)