

# A new approach to SW broadband estimation and unfiltering

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## Goal

In the context of the Climate SAF: derive TOA fluxes from long term AVHRR record.

In the context of the Gerb project: solve the long standing problem of the GERB SW asymmetry [Bertrand et al, 2006]

## Method

Use **linear** relation to estimate broadband reflectances from filtered reflectances.

Use same relation for reflectances and albedos → regression **coefficients depend only on solar-zenith angle**.

Deal with residual scene dependent unfiltering errors later in flux determination step.

## SEVIRI:

$$\text{AlbBB} = \text{offset} + \text{gain}_{0.6} * \text{Alb}_{0.6} + \text{gain}_{0.8} * \text{Alb}_{0.8}$$

## AVHRR:

$$\text{AlbBB} = \text{offset} + \text{gain}_{0.63} * \text{Alb}_{0.63} + \text{gain}_{0.83} * \text{Alb}_{0.83}$$

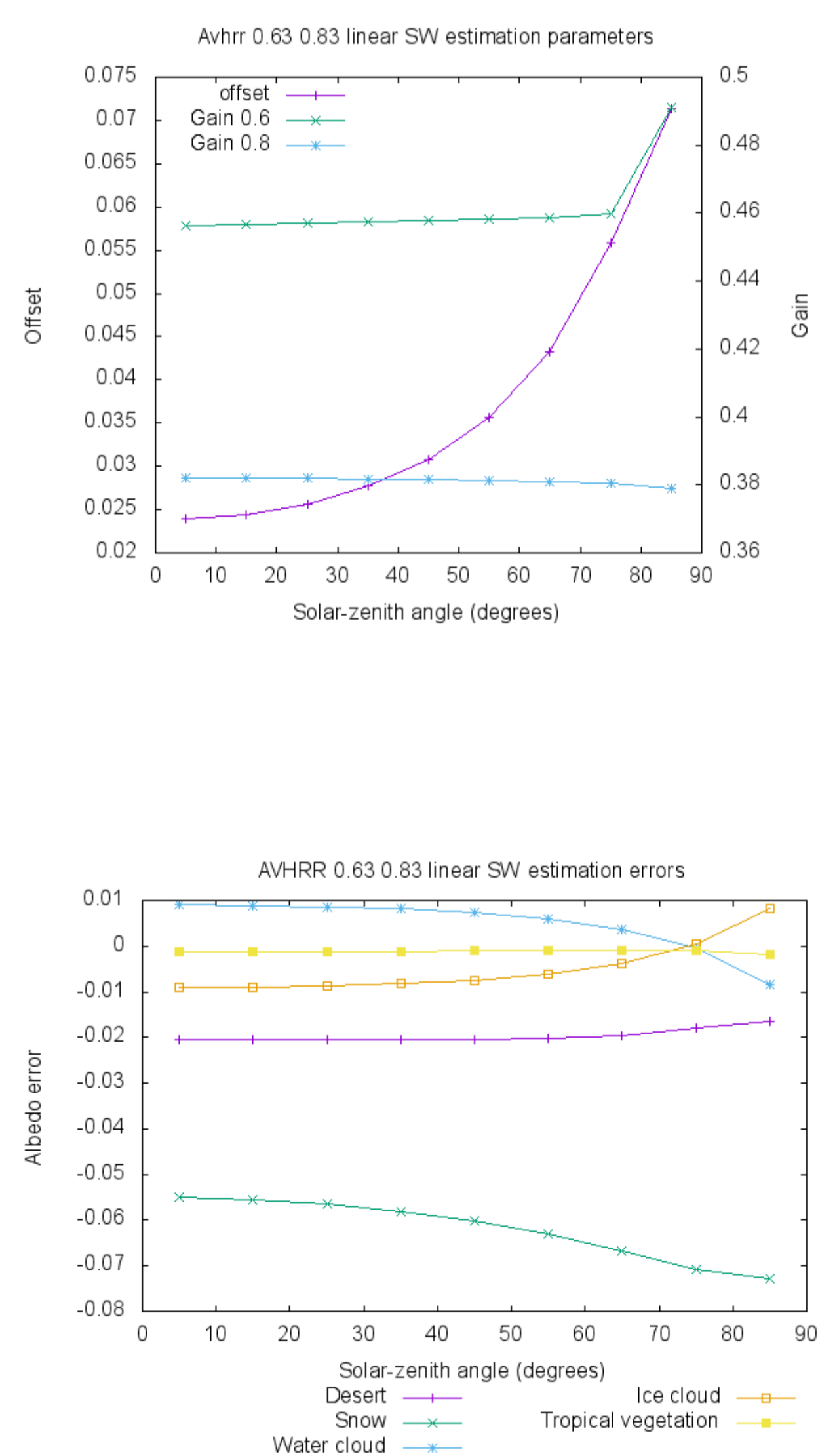
3 regression coefficients are obtained by imposing perfect estimation for 3 scenes: 1) ocean, 2) midlatitude vegetation, 3) average of thick water and ice clouds

## GERB:

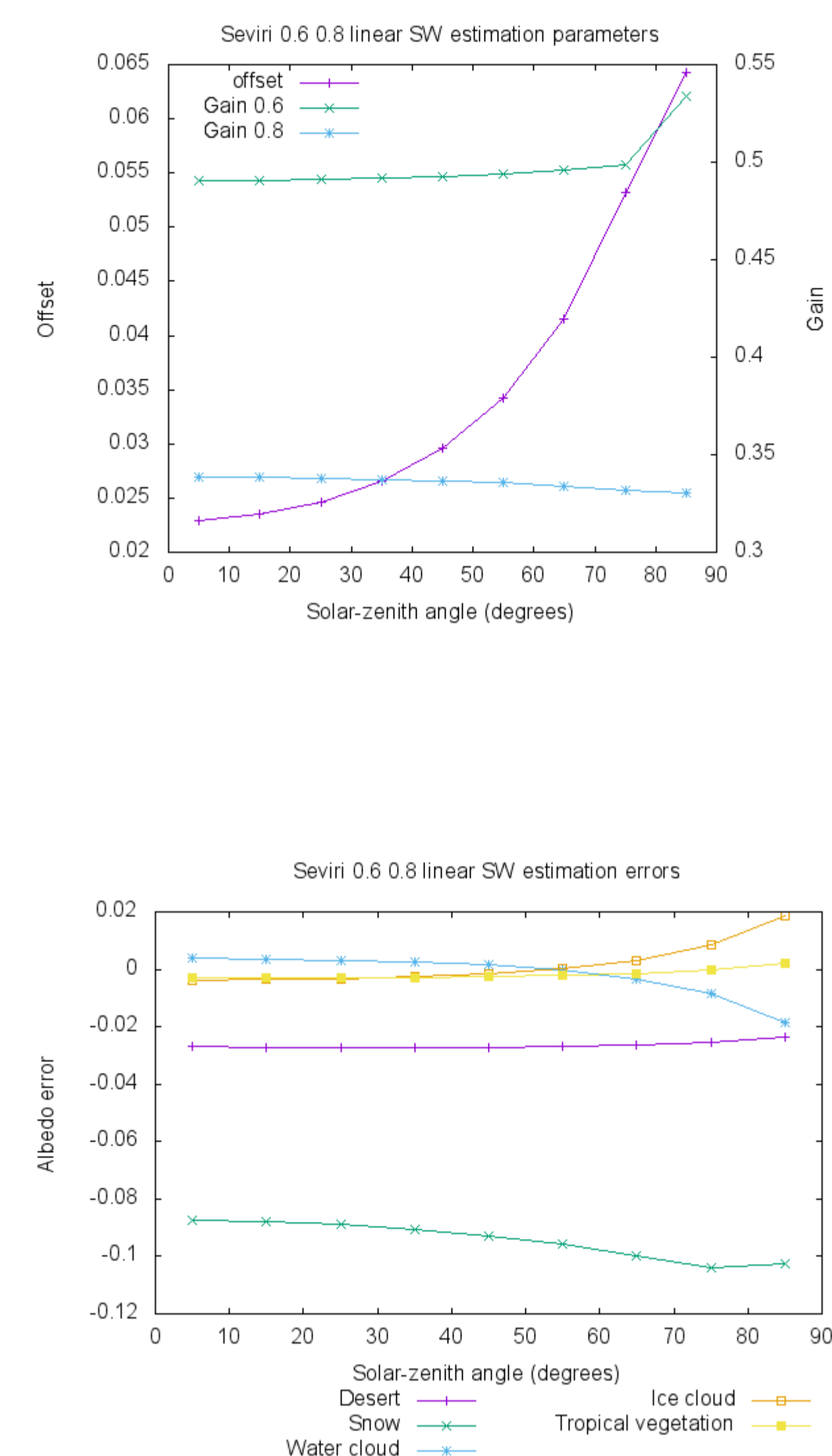
$$\text{AlbBB} = \text{offset} + \text{gain}_{\text{Gerb-SW}} * \text{Alb}_{\text{Gerb-SW}}$$

2 regression coefficients are obtained by imposing perfect estimation for 3 scenes: 1) ocean, 2) average of thick water and ice clouds

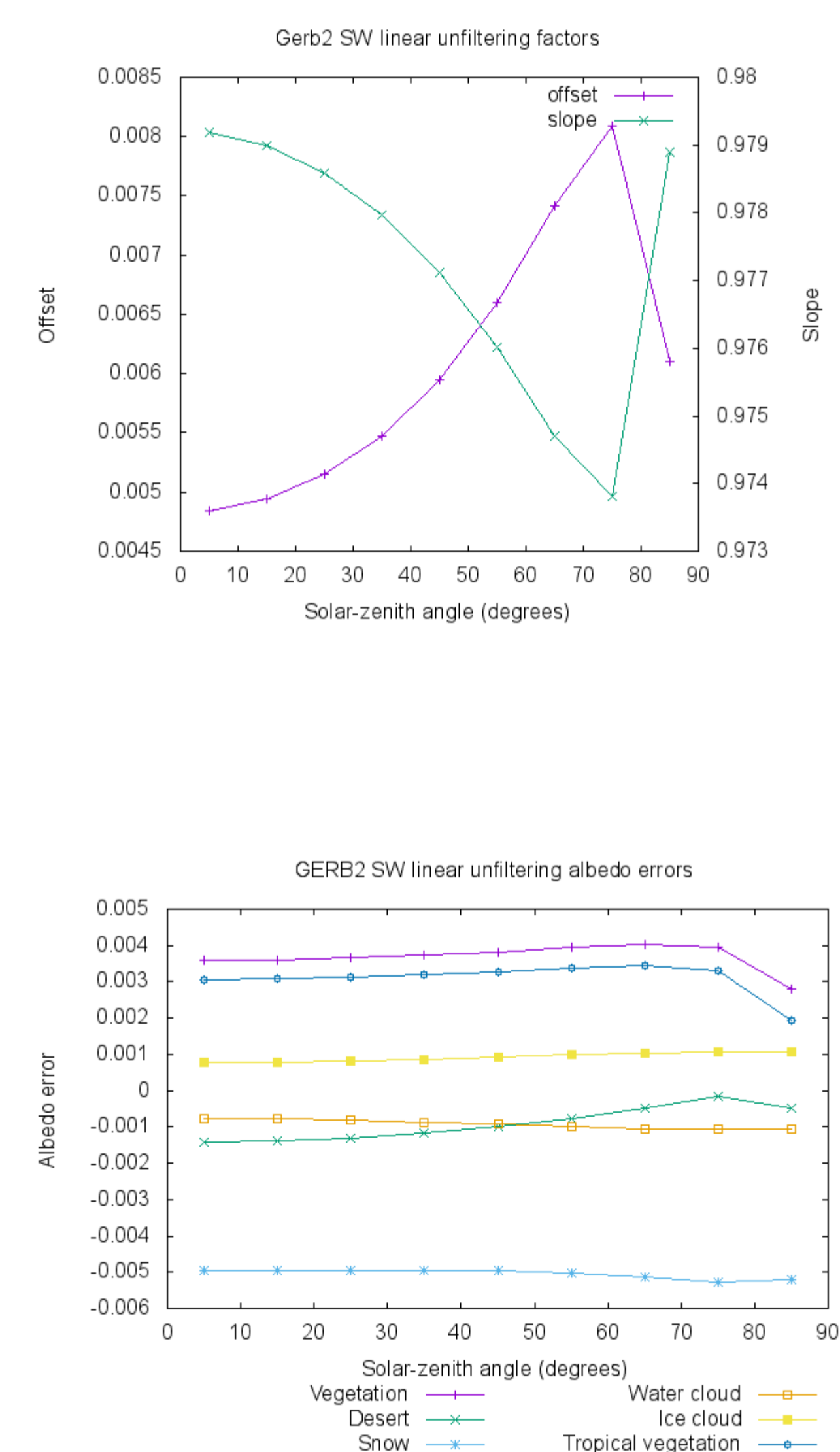
## Results AVHRR



## Results SEVIRI



## Results GERB



## References

[Bertrand et al, 2006], Diurnal asymmetry in the GERB SW fluxes.