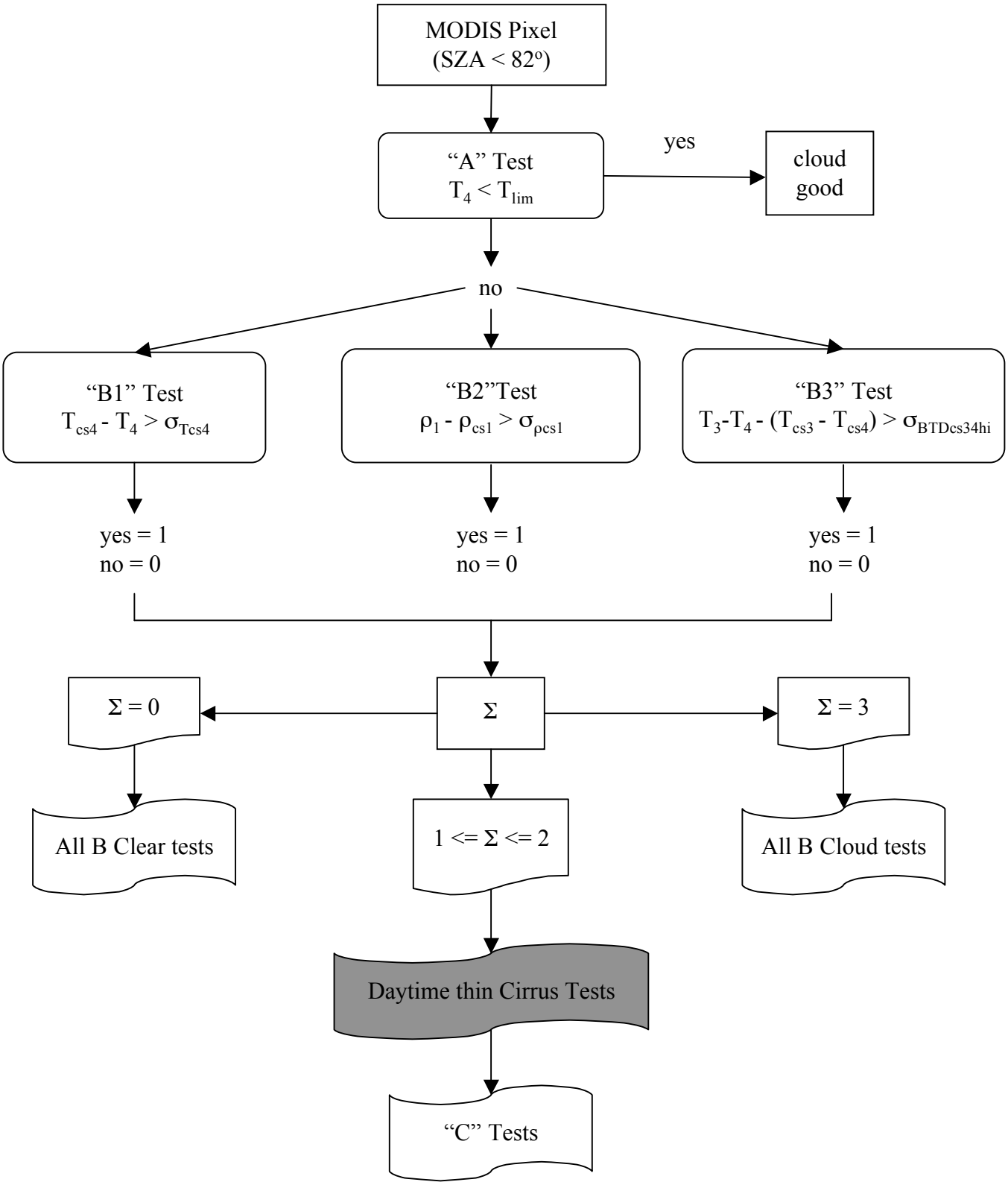
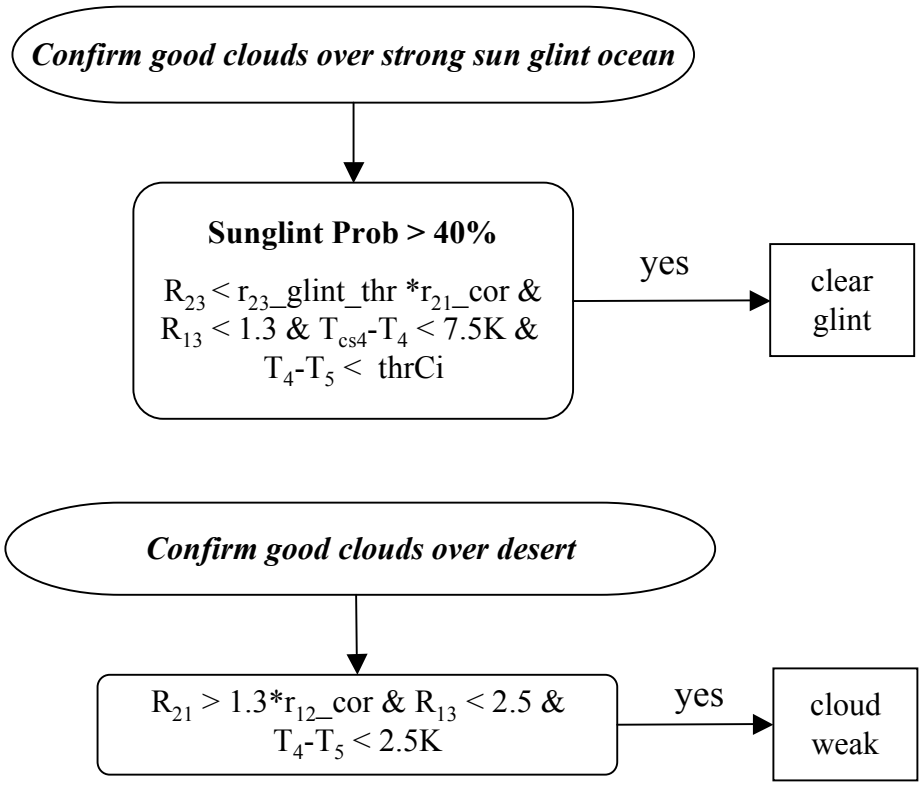
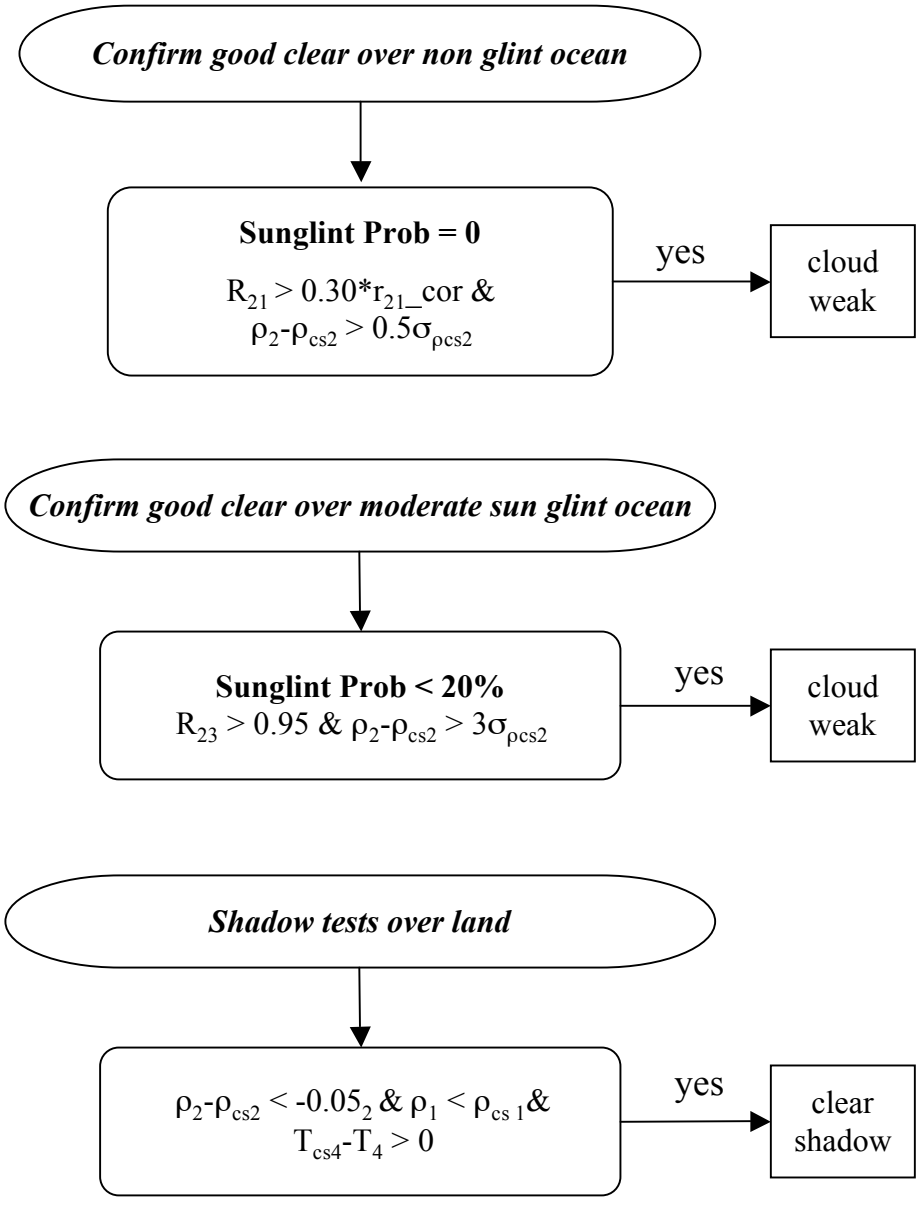
Day Time CERES Cloud Mask



After All B Tests Return Good Clouds

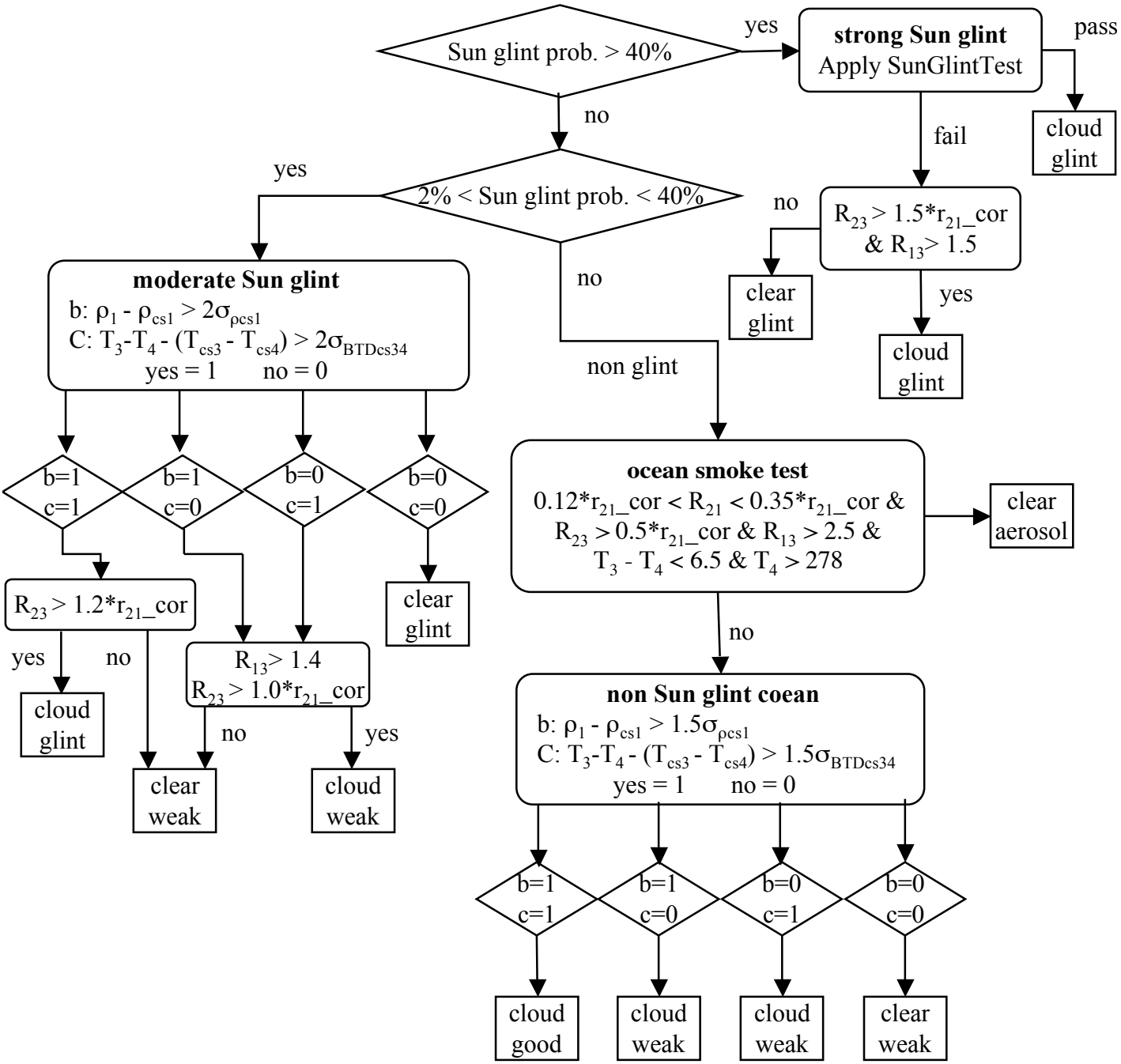


After All B Tests Return Good Clear



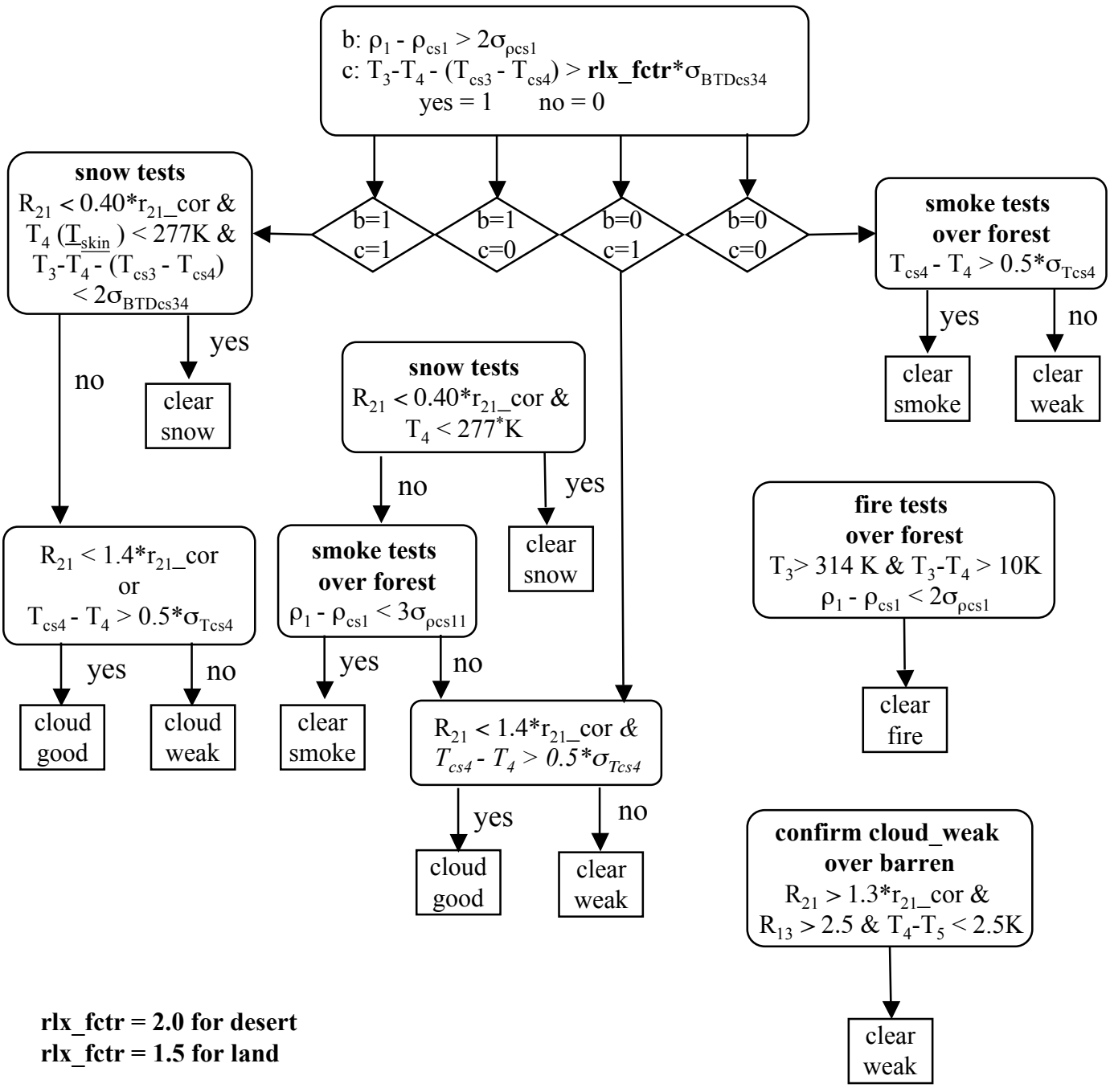
C1 Test Over Ocean

B tests pattern: (a) IR = 0, (b) VIS = 1, (c) 3-4 = 1



C1 Test Over Land

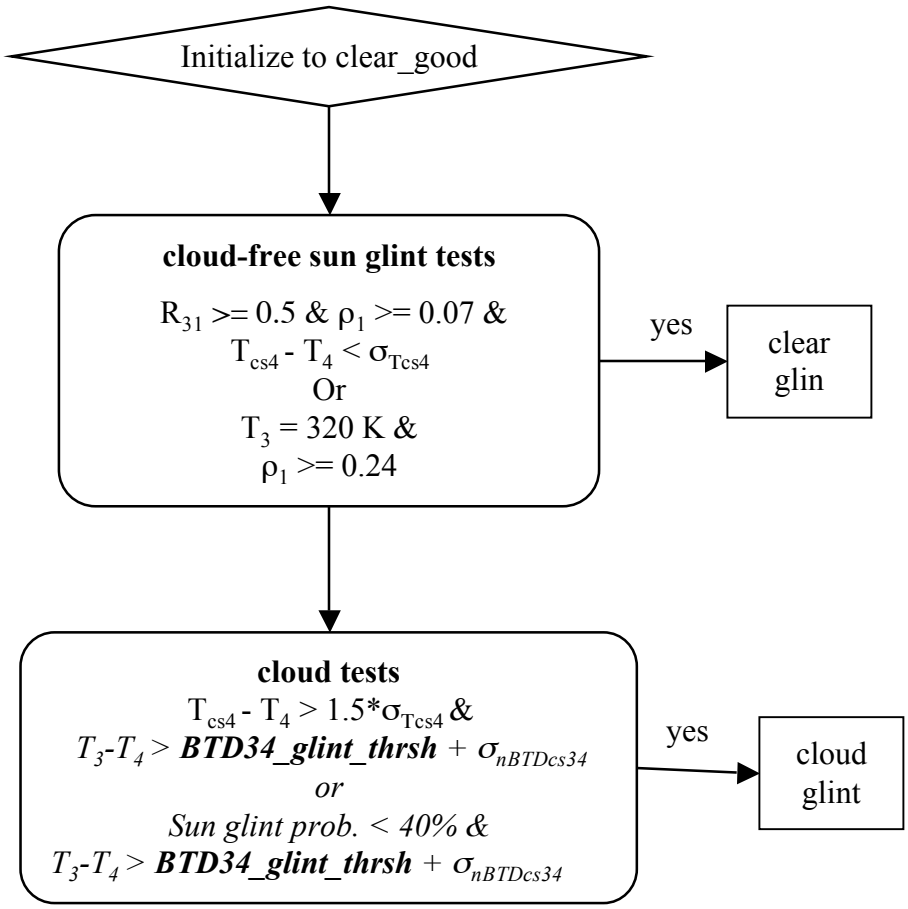
B tests pattern: (a) IR = 0, (b) VIS = 1, (c) 3-4 = 1



rlx_fctr = 2.0 for desert
rlx_fctr = 1.5 for land

underline text is for Terra Ed2
Italic tests are only in Aqua Ed1

Sun Glint Test over Ocean

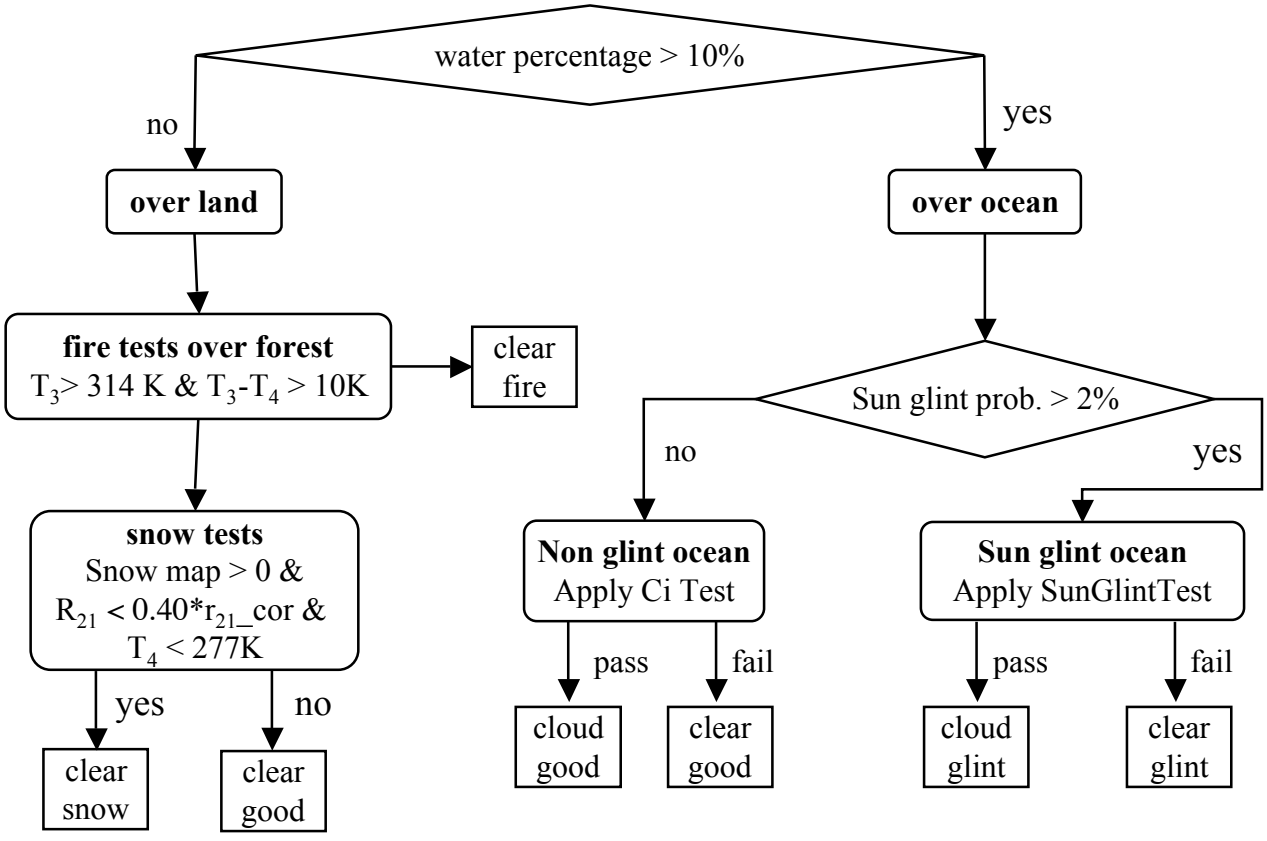


BTD34_glint_thrsh = 4.316 + 0.123*Sun glint prob

Italic tests are only in Aqua Ed1

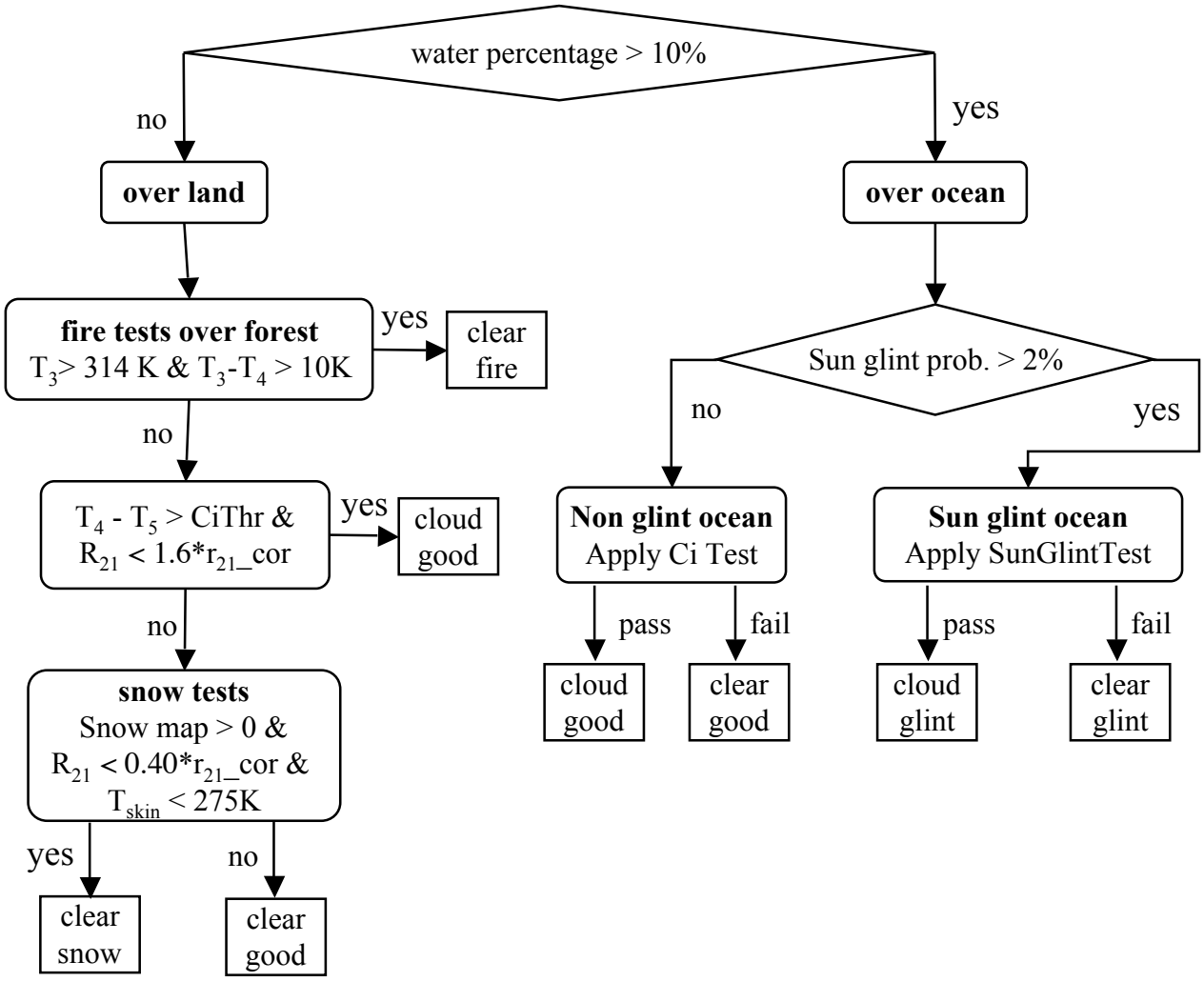
C2 Test - Aqua Edition 1

B tests pattern: (a) IR = 0, (b) VIS = 0, (c) 3-4 = 1



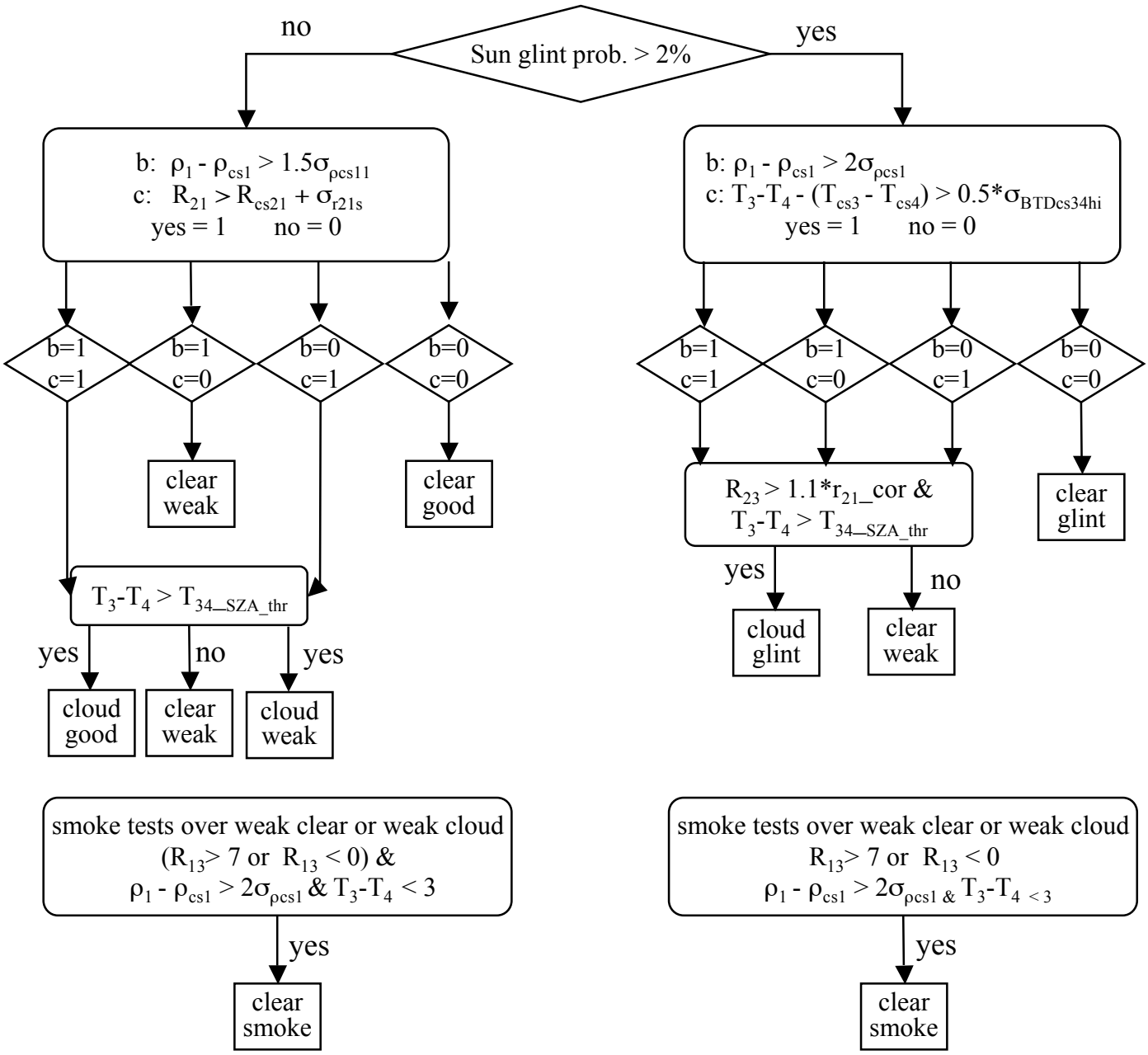
C2 Test Terra Edition 2

B tests pattern: (a) IR = 0, (b) VIS = 0, (c) 3-4 = 1



C3 Test Over Ocean Aqua Edition 1

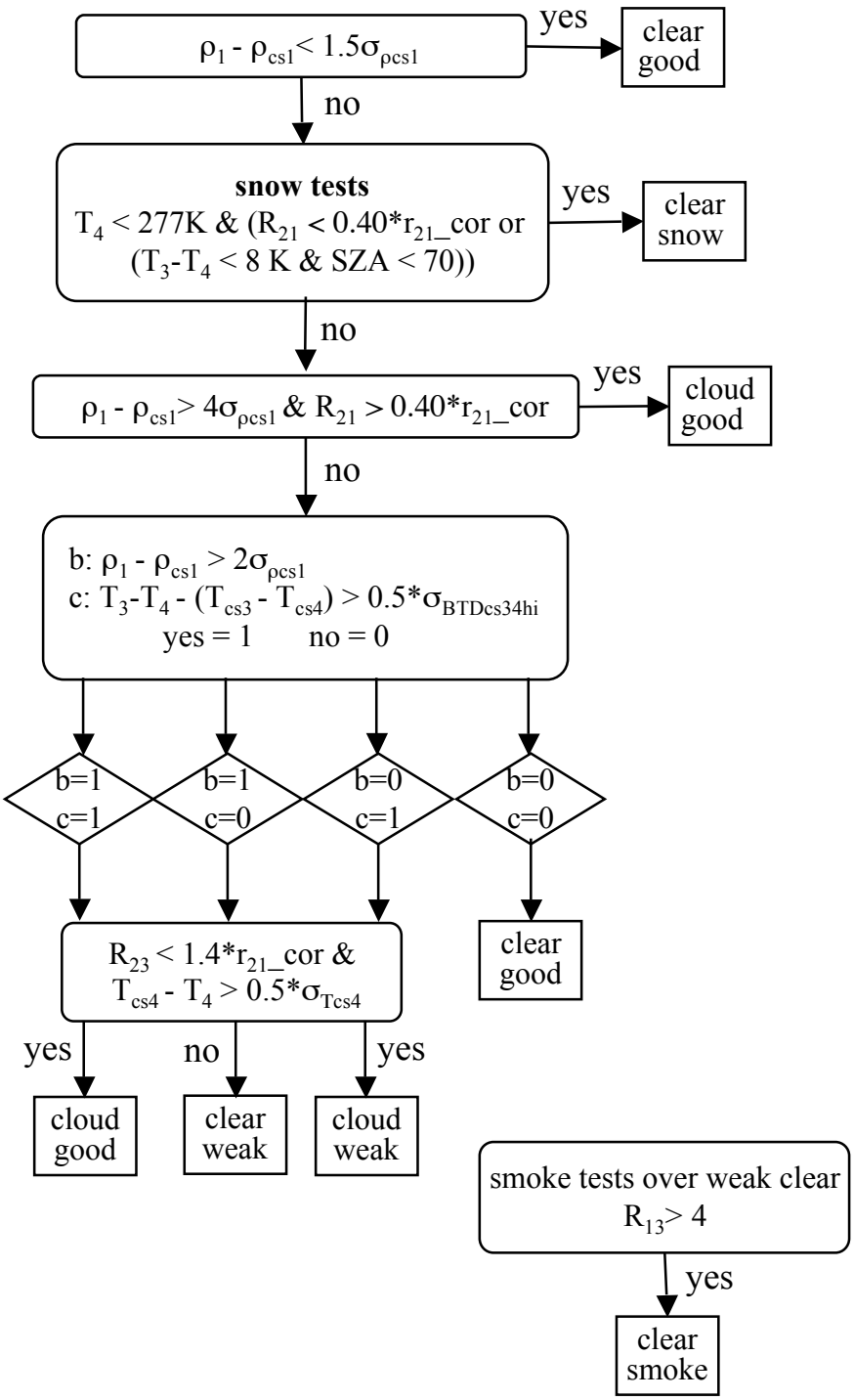
B tests pattern: (a) IR = 0, (b) VIS = 1, (c) 3-4 = 0



$T_{34_SZA_thr} = 5.23*(\text{cosSZA} - 1.0) + 6.0$

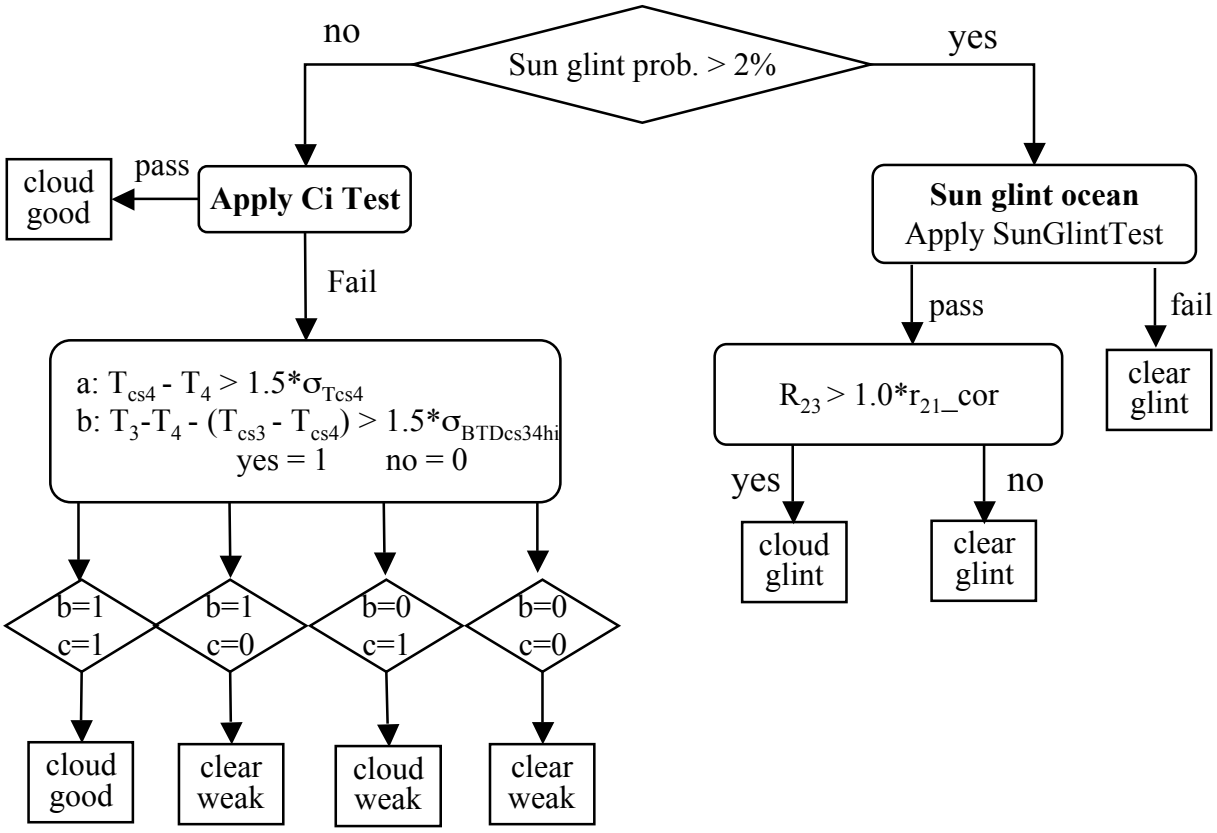
C3 Test Over Land Aqua Edition 1

B tests pattern: (a) IR = 0, (b) VIS = 1, (c) 3-4 = 0



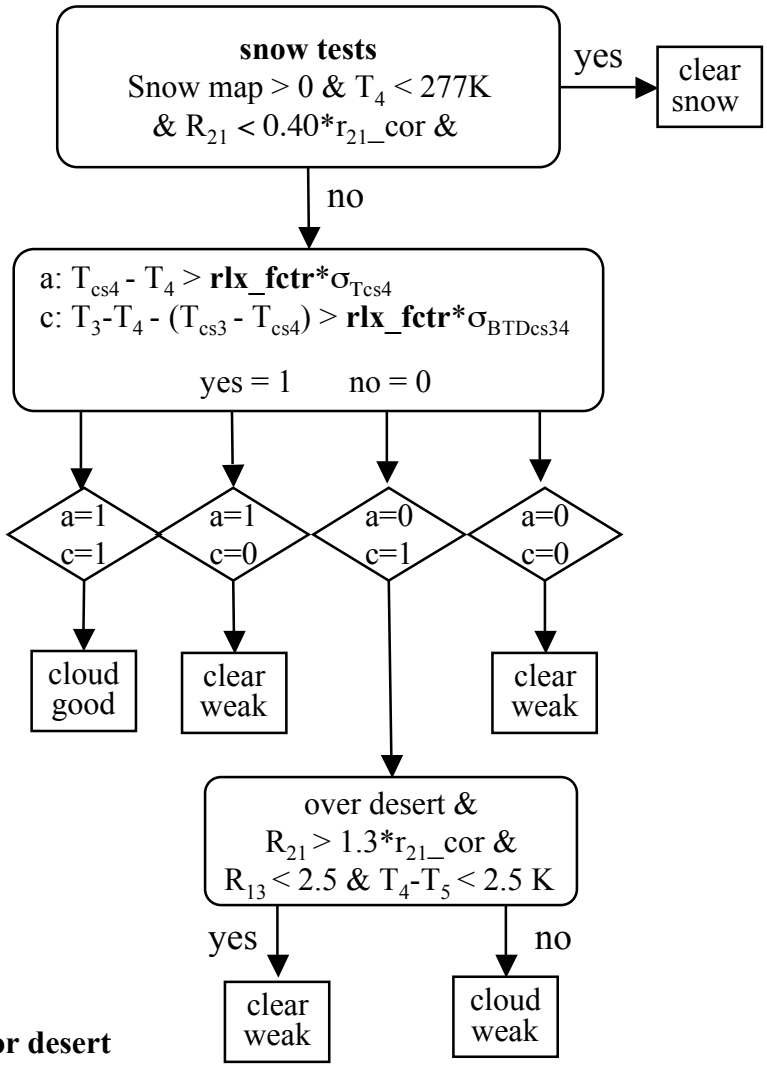
C4 Test Over Ocean Aqua Edition 1

B tests pattern: (a) IR = 1, (b) VIS = 0, (c) 3-4 = 1



C4 Test Over Land Aqua Edition 1

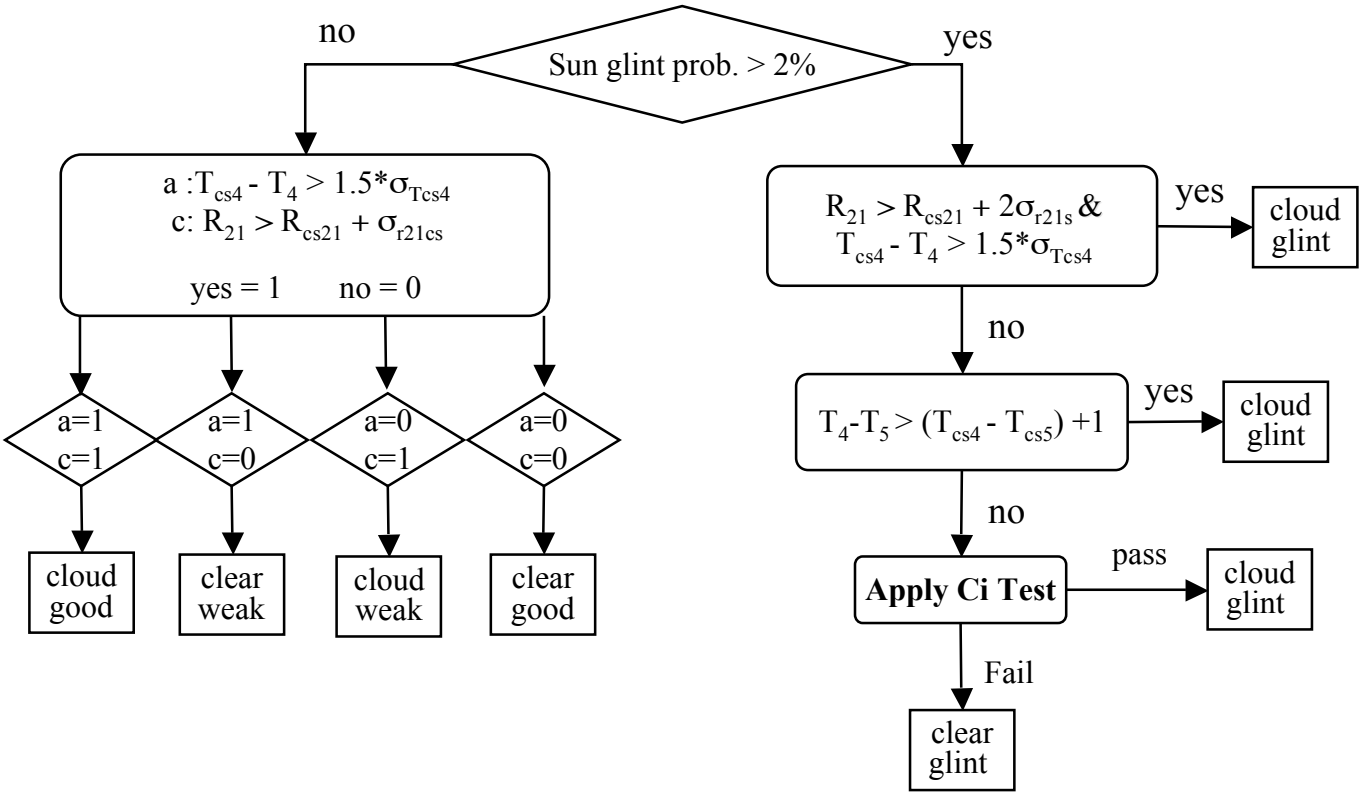
B tests pattern: (a) IR = 1, (b) VIS = 0, (c) 3-4 = 1



rlx_fctr = 2.0 for desert
rlx_fctr = 1.5 for land

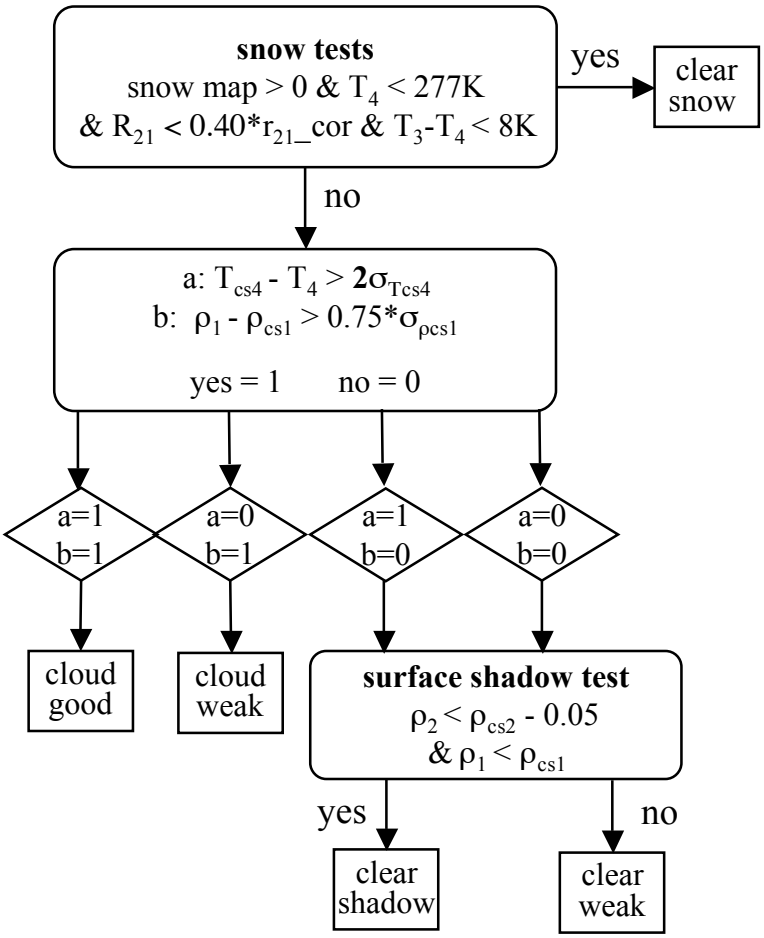
C5 Test Over Ocean Aqua Edition 1

B tests pattern: (a) IR = 1, (b) VIS = 0, (c) 3-4 = 0



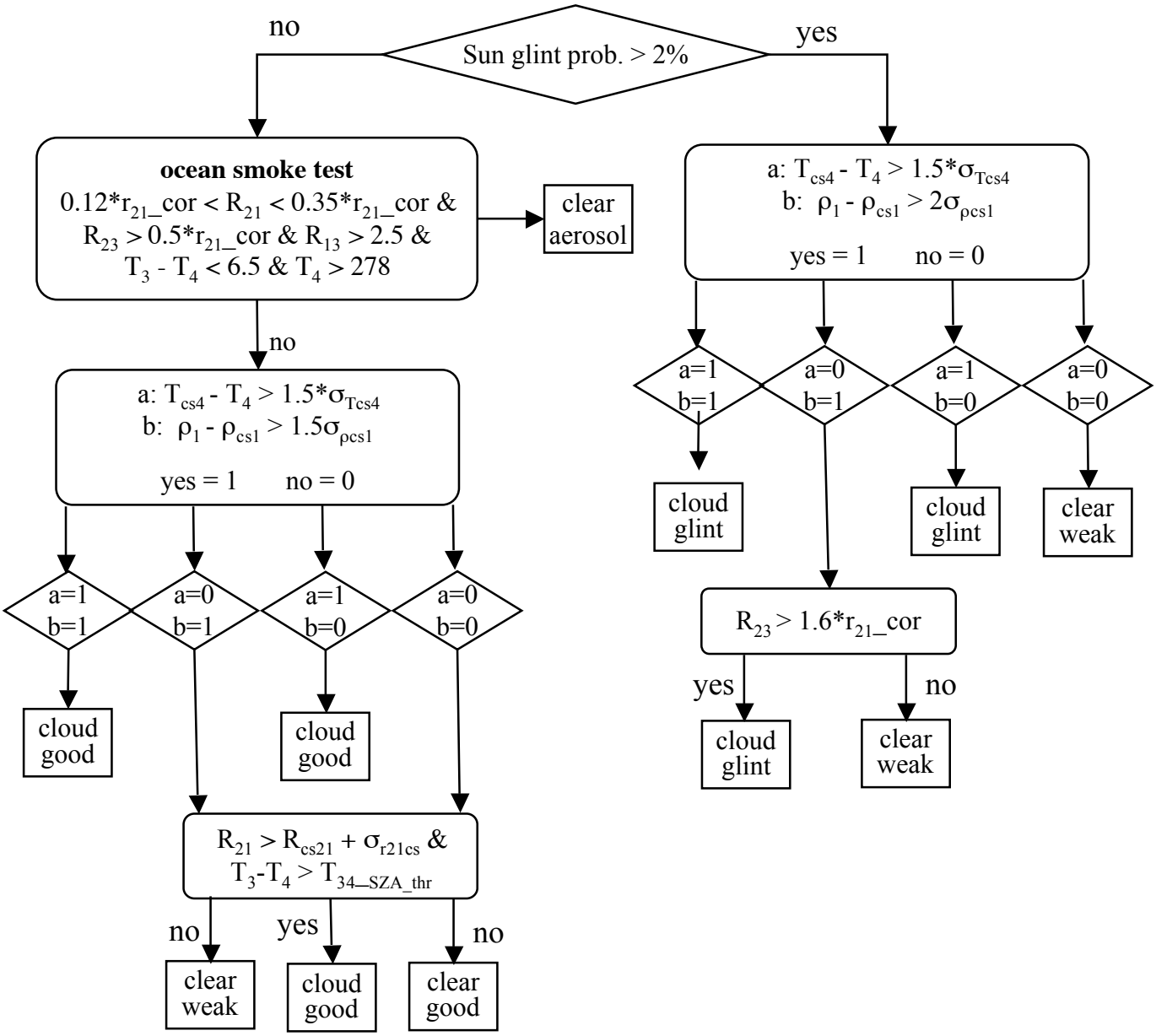
C5 Test Over Land Aqua Edition 1

B tests pattern: (a) IR = 1, (b) VIS = 0, (c) 3-4 = 0



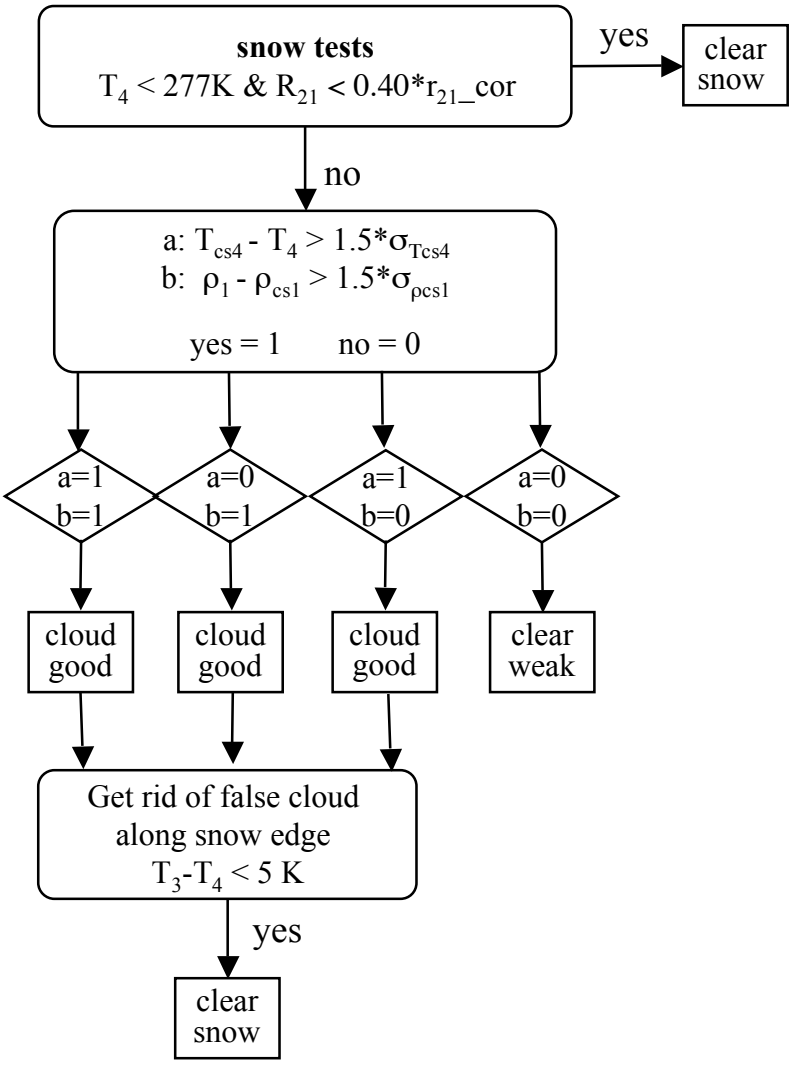
C6 Test Over Ocean Aqua Edition 1

B tests pattern: (a) IR = 1, (b) VIS = 1, (c) 3-4 = 0

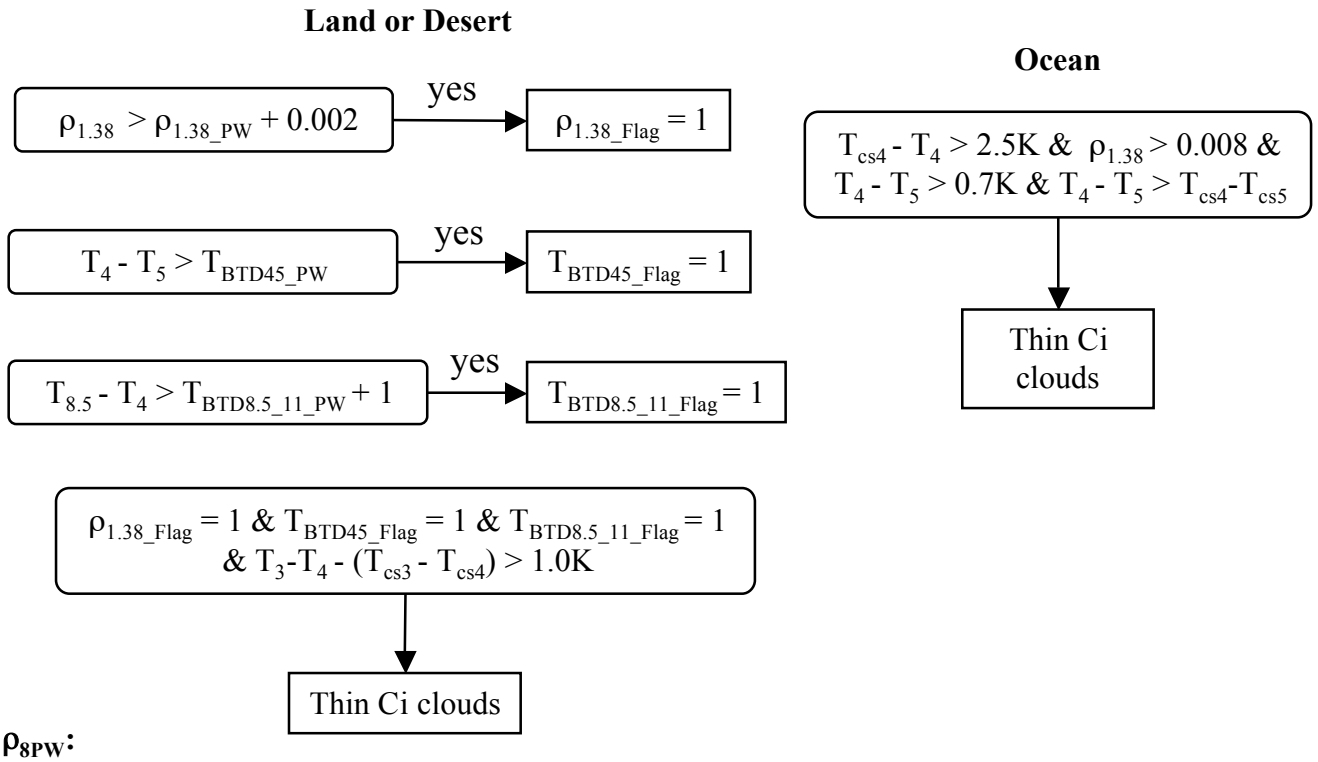


C6 Test Over Land Aqua Edition 1

B tests pattern: (a) IR = 1, (b) VIS = 1, (c) 3-4 = 0



Aqua MODIS Daytime Thin Cirrus Tests



ρ_{8PW}:
land & desert : use 5th degree polynomial fit to count for Precipitable Water (PW) dependent.

land:
$\rho_{8PW} = 0.0175 - 0.0338*PW + 0.0248*PW^2 - 0.0082*PW^3 + 0.00122*PW^4 - 0.0000675*PW^5$

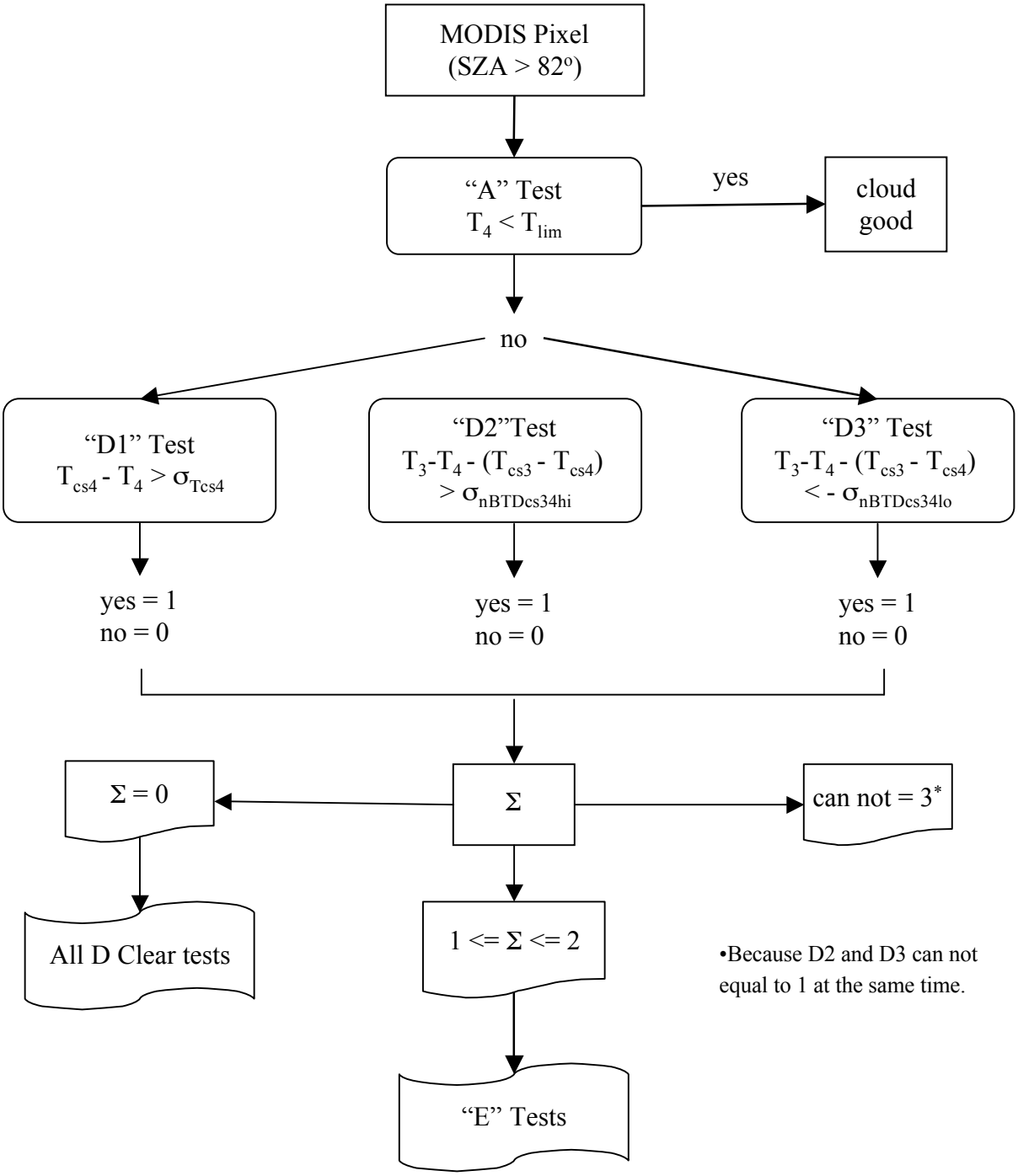
desert:
$\rho_{8PW} = 0.0255 - 0.0546*PW + 0.0475*PW^2 - 0.0193*PW^3 + 0.00365*PW^4 - 0.000258*PW^5$

T_{45PW}:
land: $T_{45PW} = BTD_{cs45} - 0.5K$ to count for PW and VZA dependent.
desert: use a quadratic fit for PW dependent, ignore VZA dependent since the air is dry.

$$T_{45PW} = -0.845 + 1.3918*PW - 0.128*PW^2$$

T_{64PW} :
land & desert: use 3rd and 4th degree polynomial fit for PW.
land : $T_{64PW} = -2.3954 - 1.708*PW + 0.65*PW^2 - 0.0547*PW^3$
desert : $T_{64PW} = -4.380 - 9.273*PW + 6.223*PW^2 - 1.367*PW^3 + 0.10304*PW^4$

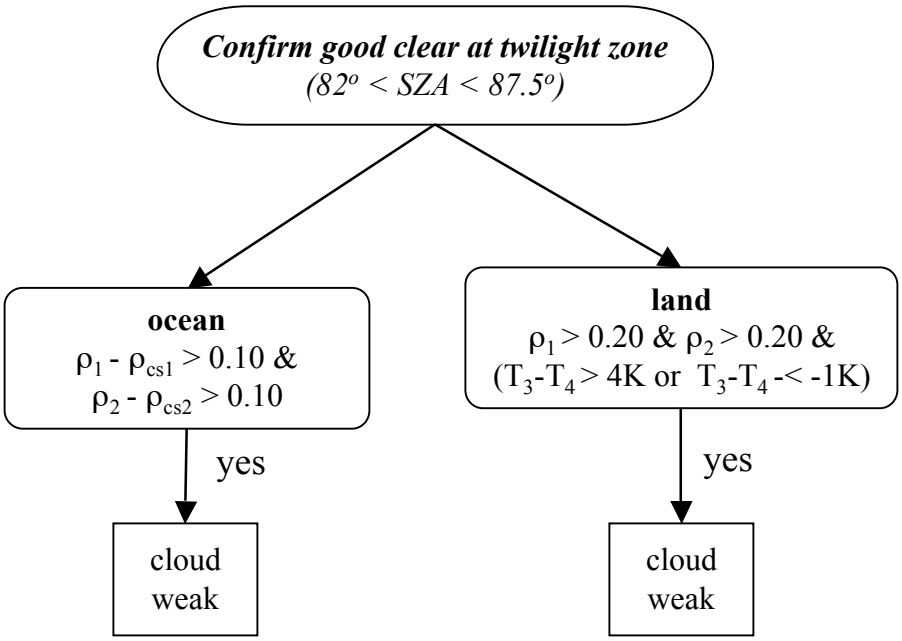
Night Time CERES Cloud Mask



•Because D2 and D3 can not equal to 1 at the same time.

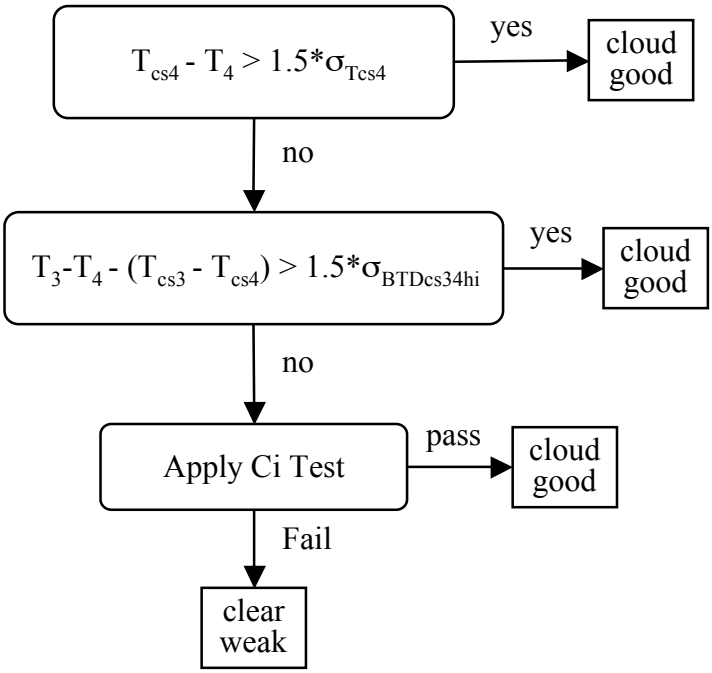
$\sigma_{nBTDcs34lo} = \sigma_{nBTDcs34hi} - 0.5K$

After All D Tests Return Good Clear



E1 Test Aqua Edition 1

D tests pattern: (a) IR = 1, (b) 3-4$_{hi}$ = 1, (c) 3-4$_{low}$ = 0

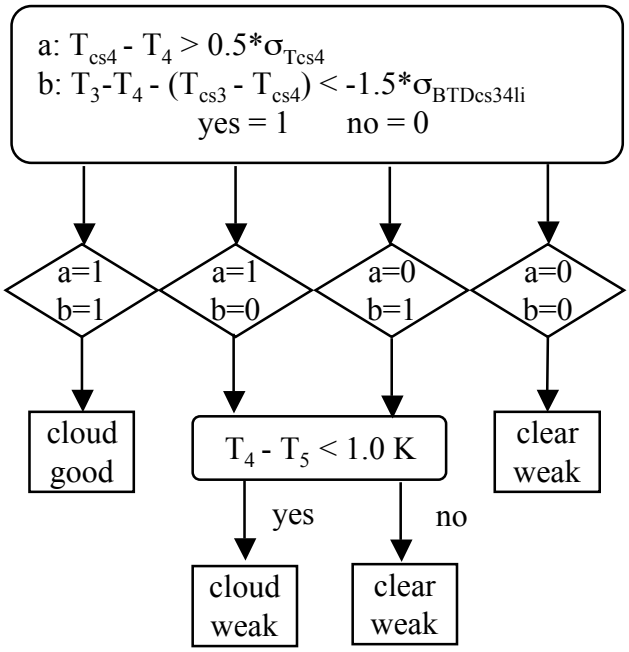


Ci Test: $T_4 - T_5 >$ CiThr

CiThr is based on SERCAA's look-up table, it's a function of T4 and VZA

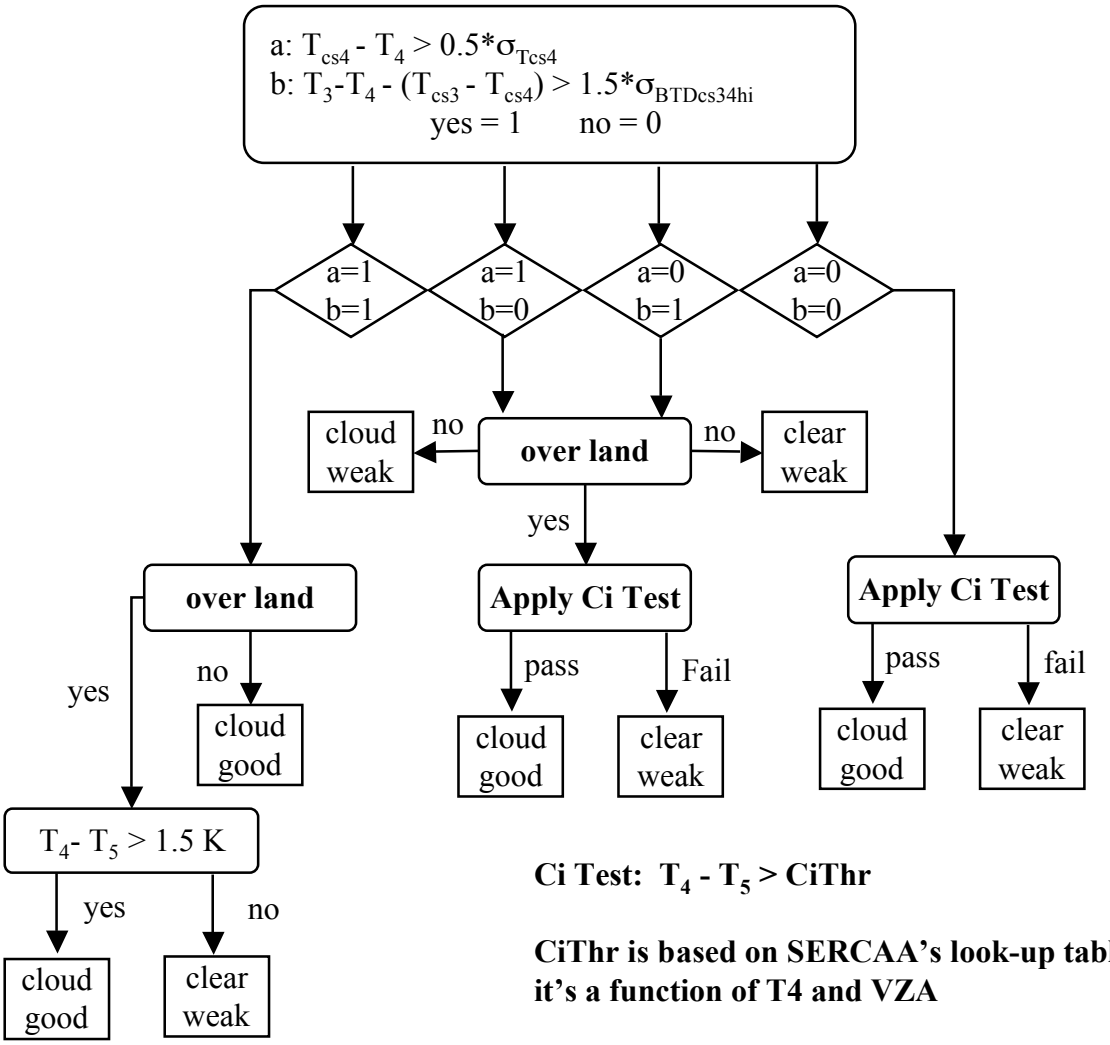
E2 Test Aqua Edition 1

D tests pattern: (a) IR = 0, (b) 3-4$_{hi}$ = 0, (c) 3-4$_{low}$ = 1



E3 Test Aqua Edition 1

D tests pattern: (a) IR = 0, (b) 3-4$_{hi}$ = 1, (c) 3-4$_{low}$ = 0

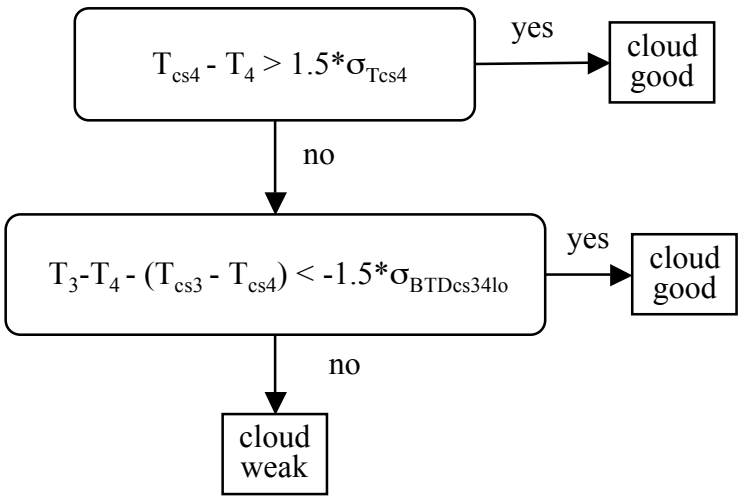


Ci Test: $T_4 - T_5 >$ CiThr

CiThr is based on SERCAA's look-up table, it's a function of T4 and VZA

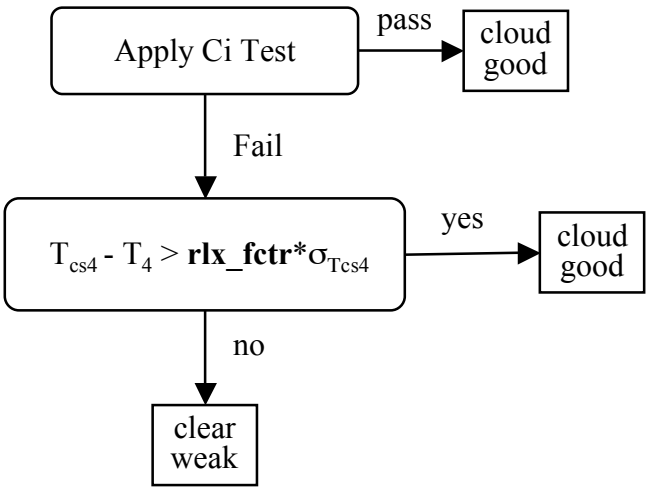
E4 Test Aqua Edition 1

D tests pattern: (a) IR = 1, (b) 3-4$_{hi}$ = 0, (c) 3-4$_{low}$ = 1



E5 Test Aqua Edition 1

D tests pattern: (a) IR = 1, (b) 3-4$_{hi}$ = 0, (c) 3-4$_{low}$ = 0



rlx_fctr = 2.0 for light vegetation
rlx_fctr = 1.5 for rest IGBP