# Decision Tree Module – SWIR Tests

5 May 2005

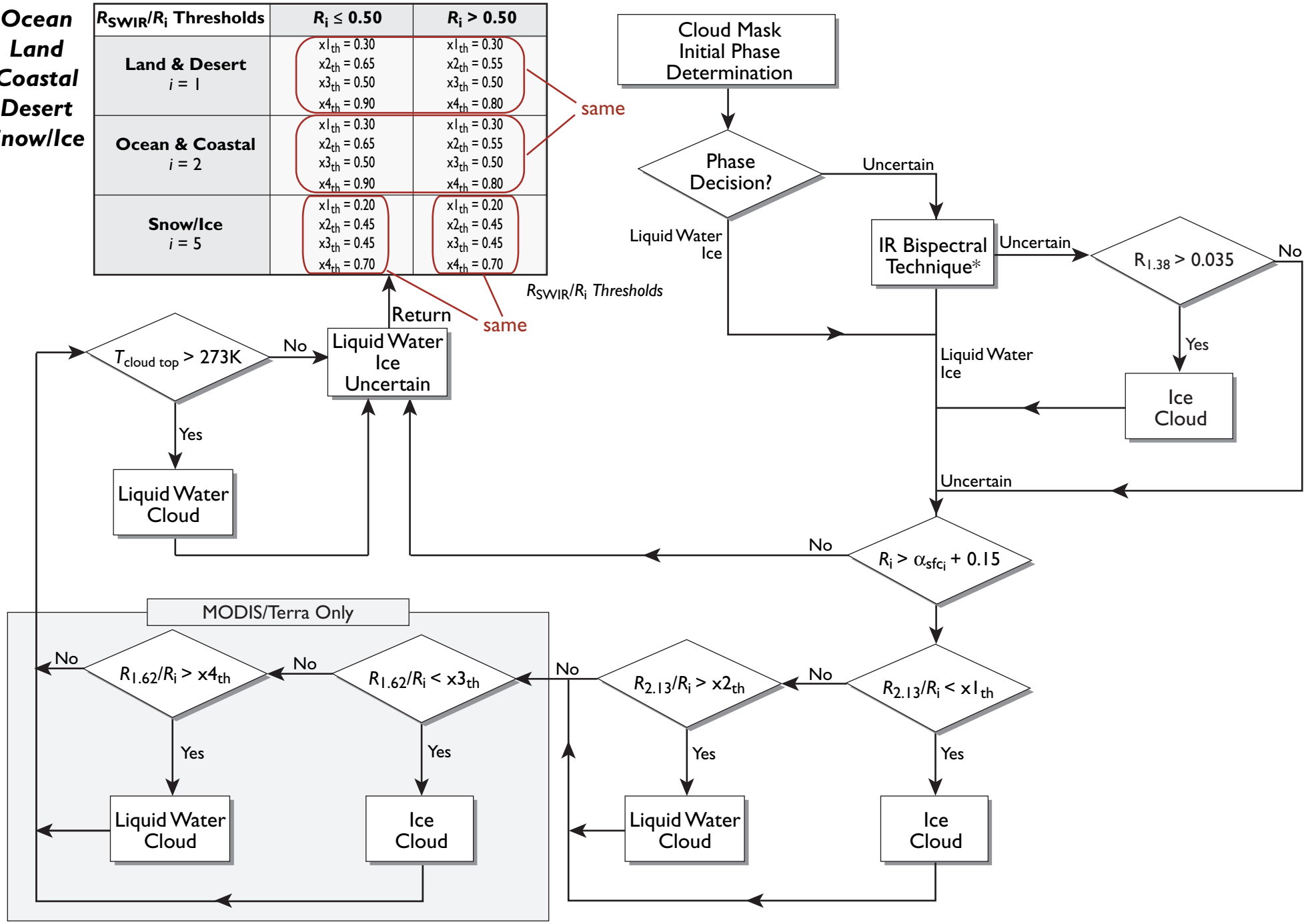
**Ocean**
**Land**
**Coastal**
**Desert**
**Snow/Ice**

| $R_{SWIR}/R_i$ Thresholds | $R_i \leq 0.50$ | $R_i > 0.50$ |
|---|---|---|
| **Land & Desert** $i = 1$ | $x1_{th} = 0.30$<br>$x2_{th} = 0.65$<br>$x3_{th} = 0.50$<br>$x4_{th} = 0.90$ | $x1_{th} = 0.30$<br>$x2_{th} = 0.55$<br>$x3_{th} = 0.50$<br>$x4_{th} = 0.80$ |
| **Ocean & Coastal** $i = 2$ | $x1_{th} = 0.30$<br>$x2_{th} = 0.65$<br>$x3_{th} = 0.50$<br>$x4_{th} = 0.90$ | $x1_{th} = 0.30$<br>$x2_{th} = 0.55$<br>$x3_{th} = 0.50$<br>$x4_{th} = 0.80$ |
| **Snow/Ice** $i = 5$ | $x1_{th} = 0.20$<br>$x2_{th} = 0.45$<br>$x3_{th} = 0.45$<br>$x4_{th} = 0.70$ | $x1_{th} = 0.20$<br>$x2_{th} = 0.45$<br>$x3_{th} = 0.45$<br>$x4_{th} = 0.70$ |

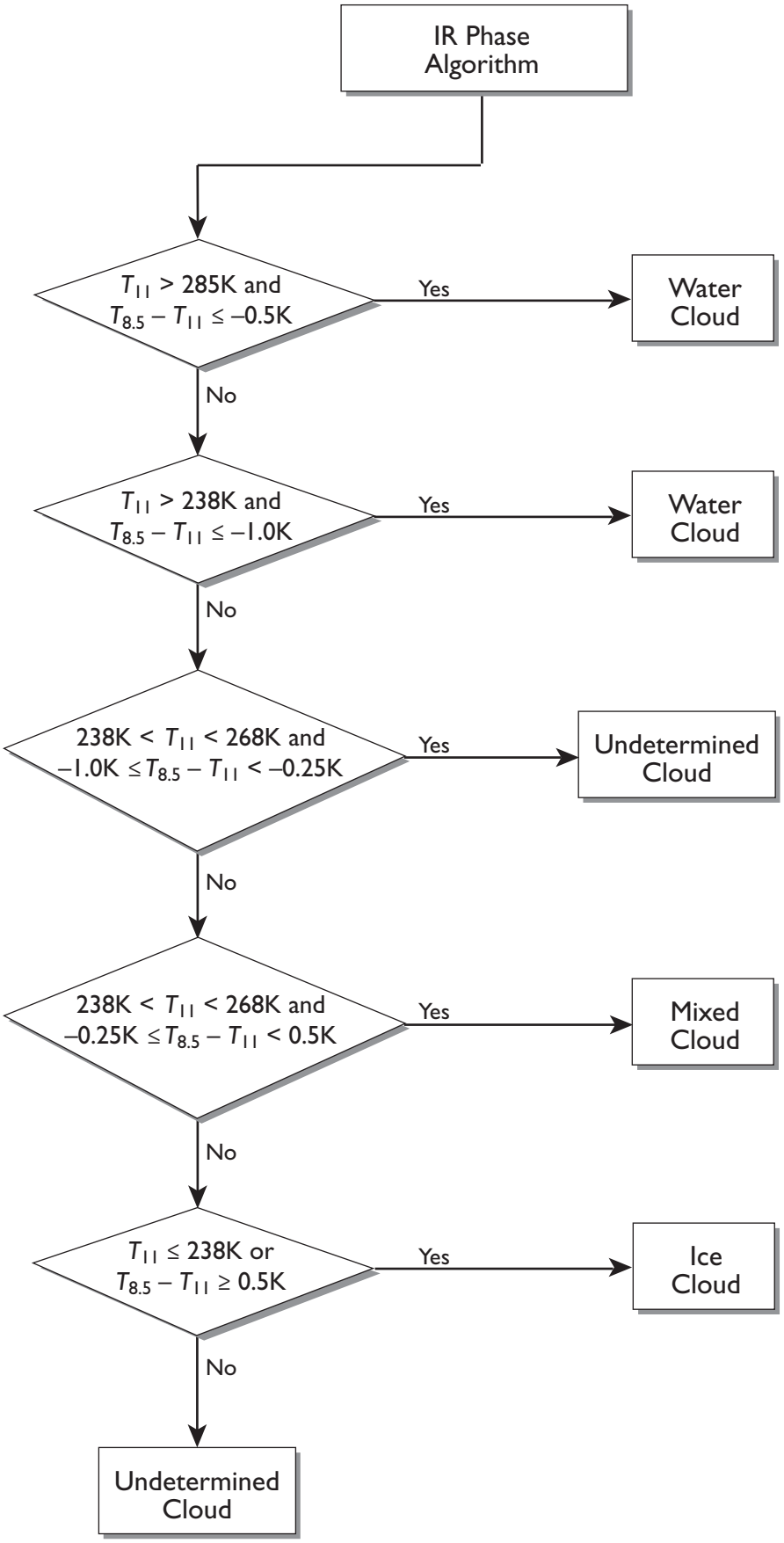
same

same

*$R_{SWIR}/R_i$ Thresholds*




* If Bispectral Test returns 'mixed phase,' process as Ice


IR Phase Algorithm
$T_{11}$ > 285K and $T_{8.5} - T_{11} \leq -0.5$K
Yes
Water Cloud
No
$T_{11}$ > 238K and $T_{8.5} - T_{11} \leq -1.0$K
Yes
Water Cloud
No
238K < $T_{11}$ < 268K and $-1.0$K $\leq T_{8.5} - T_{11} < -0.25$K
Yes
Undetermined Cloud
No
238K < $T_{11}$ < 268K and $-0.25$K $\leq T_{8.5} - T_{11} < 0.5$K
Yes
Mixed Cloud
No
$T_{11} \leq$ 238K or $T_{8.5} - T_{11} \geq 0.5$K
Yes
Ice Cloud
No
Undetermined Cloud