ATMOSPHERIC REMOTE SENSING - MAPPING CAPABILITY MATRIX CRES 12 March 2010

Table Key: O= operational, O$ = operational but cost prohibitive, f = feasible but not operational, nf =not feasible, fp=partly feasible, OE=possible if extent is bigger then several pixels

Parameter and environment				Passive						Photo graph	Active				
				Multi-spectral			Hyper-spectral				Radar		Laser		
SENSOR Type / Platform				Airborne	Satellite	Satellite	Airborne	Satellite	Satellite	Airborne	Airborne	Satellite	Airborne	Satellite	Field Instrument
PIXEL SIZE Fine < 5m, Medium 5 m - 100 m, Coarse 100 m >			Icon	Fine	Fine	Coarse	Fine	Medium	Coarse	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Solar	Top of atmosphere irradiance	total		nf	nf	f	nf	nf	O	nf	nf	nf	nf	nf	
		direct		nf	nf	f	nf	nf	O	nf	nf	nf	nf	nf	
		diffuse		nf	nf	f	nf	nf	O	nf	nf	nf	nf	nf	
	Surface irradiance	total		nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	O
		direct		nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	O
		diffuse		nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	O
Emitted longwave		radiance		f	f	O	f	f	O	nf	nf	nf	nf	nf	O
Aerosols		optical depth/ thickness		nf	f	O	nf	O	O	nf	nf	nf	f	f	O
		transmissivity		nf	f	O	nf	O	O	nf	nf	nf	f	nf	O
		particle size distribution		nf	f	O	nf	O	O	nf	nf	nf	f	nf	O
		particle mass concentration		nf	nf	O	nf	?	?	nf	nf	nf	nf	nf	O
		species		nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	f*	?
		structure in profile		nf	nf	nf	nf	nf	nf	nf	nf	nf	nf	O	O
Gases		Water vapour	H_2O	f	f	O	O	O	O	nf	nf	nf	f	nf	O
		CO_2	CO_2	f	nf	f	O	O	O	nf	nf	nf	f	nf	O
		O_3	O_3	f	nf	f	O	O	O	nf	nf	nf	f	nf	O
		N_2O	N_2O	f	nf	f	O	O	O	nf	nf	nf	f	nf	O
		O_2	O_2	f	nf	f	O	O	O	nf	nf	nf	f	nf	O
		CH_4	CH_4	f	nf	f	O	O	O	nf	nf	nf	f	nf	O
Cloud properties		Height (* = from thermal data)		f	*O	*O	f	*O	*O	nf	O	O	O	nf	O
		Droplet radius		nf	nf	O	?	?	?	nf	?	fp	fp	nf	?
		Thickness (* = from thermal data)		f	*O	*O	f	*O	*O	nf	O	O	O	nf	O
		Cloud mask/fraction		f	f	O	f	f	f	f	fp	fp	nf	nf	nf
		Cloud top temperature (* = from thermal data)		f	*O	*O	f	*O	*O	nf	O	O	O	nf	O
		structure in profile		nf	nf	pf	nf	nf	pf	nf	?	O	nf	nf	O
Rain - fall		rain rate		nf	nf	Oa	nf	nf	nf	nf	O	Oa	nf	nf	O
		accumulated total (3 hr, daily)		nf	nf	Oa	nf	nf	nf	nf	nf	Oa	nf	nf	O
		accumulated total (monthly, annually, plus)		nf	nf	Oa	nf	nf	nf	nf	nf	Oa	nf	nf	O
Atmoshperic Properties		airmass stability indices		nf	nf	O	nf	nf	?	nf	nf	nf	nf	nf	?
		Water vapour		nf	nf	O	?	?	O	nf	?	?	nf	nf	?
		Air temperature profile		nf	nf	O	?	?	O	nf	nf	nf	nf	nf	O