DBNet Satellite Priorities

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Generic considerations

- These priorities should consider
  - Availability of local processors
  - Instrument health
  - Coverage and quality of direct broadcast
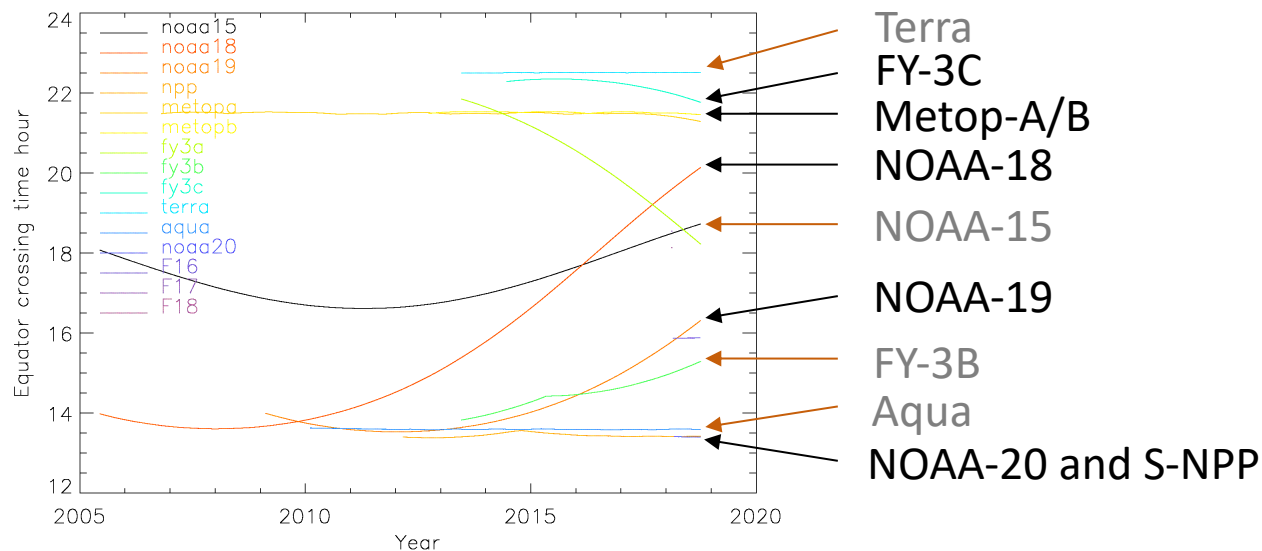 - Impact on NWP
  - Timeliness and availability of global data

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Satellite acquisition priorities (Sep 2016)

Satellite	Orbit and satellite status (D=descending, A=ascending)	Instrument health	Global data availability	Direct broadcast transmission	DBNet priority (H/M/L)
Suomi NPP	NOAA Prime Polar PM 1330A	Good	1 dump per orbit	Good (X-band).	H
Metop-B	Primary AM service. 0930D	Good	Very good: Arctic and Antarctic dumps	Good (L-band)	H
NOAA-19	Prime NOAA PM. Close to S-NPP 1400A/0200D	Good	1 dump per orbit	Good (L-band)	H
NOAA-18	Has drifted to an early morning orbit 1700A/0500D	Good. HIRS degraded	Some blind orbits	Good (L-band)	H
Metop-A	Same orbital plane as Metop-B 0930D	Good	1 dump per orbit	Limited geographically due to radiation issues	M
NOAA-15	Close to NOAA-18 0530D	Poor. AMSU-B and HIRS not working. AMSU-A is still useful.	Some blind orbits. Low priority in NESDIS L1 processing.	Poor signal strength (L-band), can only be received by large dishes	L
FY-3C	1030D	MWTS-2 not working, MWHS-2 OK.	Significant delays	Good (L-band for sounders, X-band for MERSI)	L

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Considerations for 2018

- We should to establish priorities separately for PM (ECT 12-16), EM (16-20) and AM (20-24) orbits (discuss)
- Only consider satellites where pre-processing software is available or firmly planned within next year (discuss)
- Specific considerations (Nigel)
  - It is difficult to get an order that suits everybody.
  - We recognise that some centres are now using FY-3 data operationally, but it is still a minority (can we list them?). So I'm not convinced the FY-3 should be top of the list.
  - FY-3B is low priority because of (i) its age, (ii) MWHS-1 is much less capable than MWHS-2, (iii) MWRI is working but microwave imagers are not yet part of DBNet.
  - OK for FY-3D to be high priority – but only after the global data distribution has started and data are being used operationally.
  - NOAA-18 is currently high priority because of its unique orbit (and poor global timeliness). See attached plot. In a year or two, NOAA-19 will have taken on that role, but not yet.
  - Metop-A direct broadcast is only available in some parts of the world.
  - Logistics of processing and distributing HIRAS data will need to be worked out (channels, PCs, ?). That will take some time.

Equator crossing times (Ascending)

Terra
FY-3C
Metop-A/B
NOAA-18
NOAA-15
NOAA-19
FY-3B
Aqua
NOAA-20 and S-NPP

Well-separated orbits are preferable, but NWP studies have shown benefits even when 2 instruments are in a similar orbit.

Since last DBNet-CG meeting …

- NOAA-15 dropped – downlink quality very poor
- NOAA-19 moving towards well-separated late afternoon position
- NOAA-18 is now only ~1 hour before the Metops
- Launch of NOAA-20 – same orbit as S-NPP (different phasing)
- Metop-A starting to drift, as orbital manoeuvres have ended

Satellite acquisition priorities (agreed for 2018)

Orbit	Satellite	ECT (D=descending, A=ascending)	Instrument health	Global data timeliness and availability	Direct broadcast transmission	NWP Impact	DBNet priority (H/M/L)
PM	Suomi NPP	1330A	Good	1 dump	Global (X-band).	Very high	H[1]
	NOAA-20	1330A	Good	2 dumps	Global (X-band).	Very high	M[1]
	FY-3D	1330A	Good	2 dumps, timeliness TBC	Global (X-band)	TBD	M
EM	NOAA-19	~1630D	Good	1 dump per orbit	Global (L-band)	High	H
	NOAA-18	~2000D	HIRS and MHS deg	1 dump, blind orbits	Global (L-band)	High	H[2]
AM	Metop-A	0930D	Good	1 dump	Limited (L-band)	Very high	H
	Metop-B	0930D	Good	2 dumps	Global (L-band)	Very high	M
	FY-3C	1030D	MWHS-2 OK.	1 dump, long delays	Limited	Moderate	M

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1: In PM orbit S-NPP and NOAA-20 should be given priority over Aqua
2: NOAA-18 will be reduced to M if MHS failure is permanent

Thank you
Merci

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