

REPROCESSING Analysis Centres, strategies, station issues, discussion

I.Romero 8 May, 2006

> IGS Workshop 2006 8-11 May 2006, ESOC, 1/15



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 - Repro products in the context of Finals/Rapids/Ultras
 - AOB (from previous presentations, other issues)

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Participating Institutions

<u>Abb.</u>	<u>Activity</u>	<u>Institution</u>	<u>SW</u>				
GFZ	AC ACC	GeoForschungsZentrum	EPOS				
PDR	AC	GFZ Potsdam, TU Dresden Potsdam Dresden Reprocessing (formerly TUM/TUD)	Bernese				
NGS	AC	National Geodetic Survey	page5				
SIO	AC	Scripps Institution of Oceanography	GAMIT				
ESA	AC	European Space Agency / ESOC	NAPEOS (BAHN)				
EMR	AC	Natural Resources Canada	GIPSY				
	(Possible future AC additions: COD, JPL, others?)						
EMR	SINEX Comb.	Natural Resources Canada					
NCL	SINEX Comb.	Univ. Newcastle upon Tyne					
NRL	Timescale	Naval Research Laboratory					
UNT	-	Univ. of Nottingham					
-	TZD Comb.	-					

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Repro AC Responsibilities

- Collecting RINEX data from DCs
- Selecting stations as required and agreed by the REPR coordinators
- Estimating products (orbits, EOPs, clocks, TZD, coords) following agreed conventions
- Treating station discontinuities consistently ...
- Reporting problems
- As all ACs (except one) are regular IGS ACs the .acn files stored in the IGSCB can be analysed ... but in these one can find ambiguous or incomplete information, so a new summary is needed for the ACs.

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"IGS Analysis Strategy Summary"

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	pseudorange- x cm (nom.				a priori EOPs:		satellite attitud	 Ionospheric		
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						8	- 7 7 //	<pre> * = strong consist for these item</pre>	ency with IERS/IGS c	onventions is especially import:

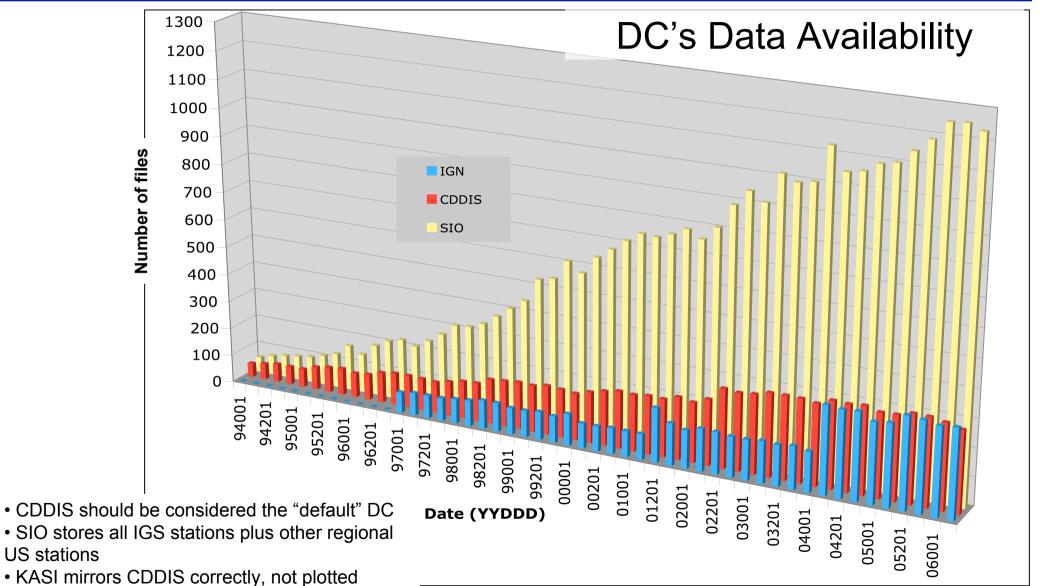


Station issues

- There are 385 stations in the latest igs.snx (valid current logs), useful old stations being added at IGSCB.
- A look has been taken to see actual data holdings at DCs, station availability in general, AC station use in IGS, etc.
- A list of priority stations is available from different constituent groups. To ensure maximum benefit from reprocessing some coordination is needed.



ESOC Navigation Support Office



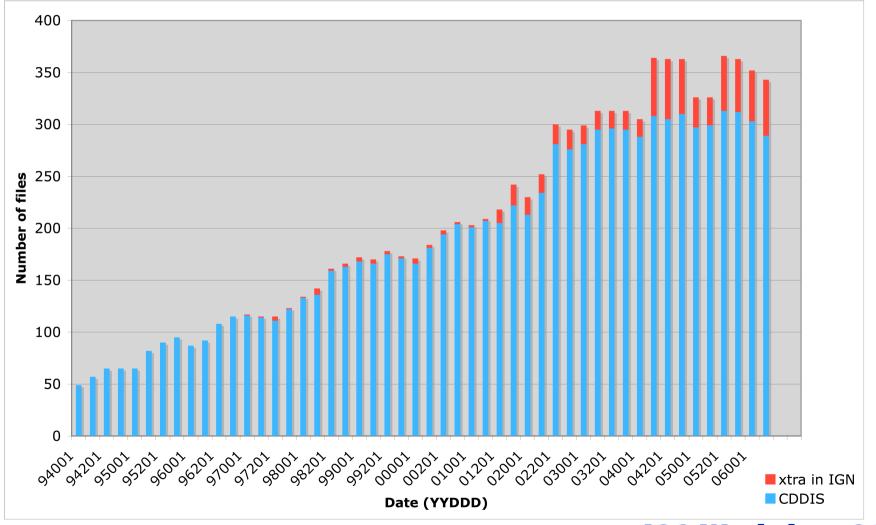
• IGN mirrors CDDIS for recent epochs (2+ yrs) with some additional stations ...

US stations

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CDDIS+IGN Data Availability



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AC station usage

 Limitation of station usage varies by AC, as can discerned from IGS Final submissions:

GFZ	SIO	NGS	ESA	EMR	PDR
180+	90+	150+	100+ (60+)	50+	160+

- Some ACs may not be able to add more stations or may have their own priorities, others can add stations ...
- It is expected, that some coordination of station usage can take place to ensure the best possible results from the Reprocessing (3 ACs per station, min)

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Reprocessing Station Selection

 Interest groups: Ref. Frame, Co-located stations, Timing sites (Hm, Cs), NGA sites (NIMA), TIGA;

Ref. Frame	Co-located	Timing	NGA	TIGA	
100+ stations	100+ stations	~115 stations	12 stations	65+	

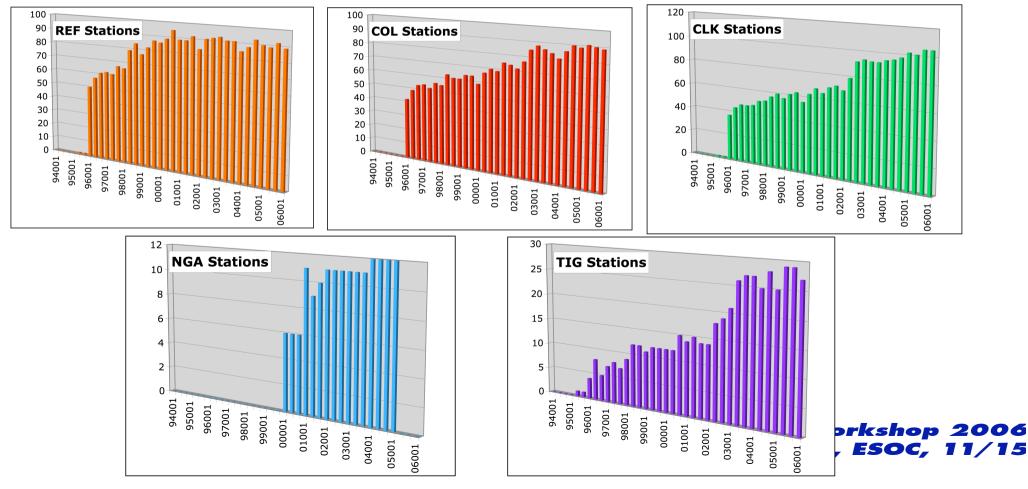
- All those stations are not available over the entire period so the situation is quite variable.
- And some of the stations are in several of the lists so the situation is simplified somewhat ...
- In the case that coordination is not possible and stations are left out an IGS PPP effort may be needed.

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Station Selection Explored (i)

• Stations change over time. The "current" station lists availability over time (at CDDIS):



Station Selection Explored (ii)

• Stations are duplicated between lists:

Ref. Frame	Co-located	Timing		<u>NGA</u>	<u>TIGA</u>	
100+ stations	100+ stations	~115 stations	12 stations		65+ stations	
-	50 % in prev lis	t 85 % in prev lists	0 % in prev lists		37 % in prev lists	
100+ new stations	51 new stations	18 new stations	12 new stations		43 new stations	
	2	24 Unique statio	ns			

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Station Selection Explored (ii)

- If we have 6 ACs each one would have to process 112 stations max to cover all the stations with 3 ACs.
- The reality is some stations may be over-subscribed, some under-subscribed. Two possible methods are proposed (R. Ferland, I. Romero):
 - 1. Publish the two lists that the stations can be split into and ask ACs to pick one (which fits their current station selection best), ask ACs to what % they can cover their "picked" list and try to reassign if needed.

OR:

- 2. Ask for all ACs current preferred processing station list, their spare capacity (if any) and % of current station they can change. Make customised lists to cover all stations with 3 ACs as well as possible.
- Method (1.) is simpler but may tie ACs too much, method (2.) is harder; communications between coordinator and ACs must be fluid, changes notified, etc.

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Conclusions

- Analysis Centres need to fill in a new processing summary and agree to common standards.
- Station Data varies greatly over time, some coordination is needed to ensure constituent groups' needs are covered, and maximum benefit obtained.
- Open points need to be finalised:

» Discussion session to start now

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Discussion Points

- Handling discontinuities; common treatment method? common list for ACs? Note discontinuities in SNX?
- **SINEX files**; daily or weekly?
- **Trop issues**: Mapping function (NMF/GMF)? Combination?
- Clock files; 300 sec / 30 sec ? Some ACs produce 30sec clock files for IGS Would it be useful if we all did this?
- Orbit Overlap; users complain of "unfinished" days Need to concat files, This is an IGS-wide issue, beyond REPR
- Station Coordination; "pick a list" or "detailed coordination", which do ACs think will work better?

Some of these points should be closed in this public forum, some may need offline iterations with the ACs.