Data Analysis Working Group meeting

<u>Date:</u> 30 May 2016

<u>Time:</u> 19-20 LT.

<u>Location:</u> SD'16 Workshop, Fairbanks

1. **Membership:**
   Existing members
      i. Pasha Ponomarenko (USask)
      ii. Keith Kotyk (USask)
      iii. Kevin Stern (VT)
      iv. Evan Thomas (Dartmouth)

   are joined by

      v. Jianjun Liu (PRIC)
      vi. Angeline Burrell (Leicester).

2. **FITACF 3.0**:
   Pasha asked if anyone would help with testing FITACF 3.0 against real data, and Jianjun, Mohammad and Angeline volunteered to give it a go. Pasha suggested them to contact Keith directly about the details. The actual code and instructions how to run it are located at
   https://github.com/SuperDARNCanada/fitacf.3.0

3. **RST**:
   - Pasha: <u>Main strategic task is to refactor and optimise the whole RST</u> in the same way as it has been done to FITACF. We have to make it portable, system-independent and easily compilable. We need to create a block diagram describing functional dependences between different packages, which would allow us to identify those that are not essential and can be made optional so that they would not affect compilation of the basic package. The way of operation is that different parts of the package are analysed in details by suitable WG members with respect to the algorithms implemented, and then the actual re-coding is performed by Keith in order to maintain the package's consistency.
   - Evan, Pasha: <u>Next step in re-factoring is gridding</u>, to be followed by <u>map potential</u>. Evan has already started to look at the gridding code and to make his own IDL copy of it for testing purposes. He is also writing comprehensive comments. So far, Evan has compiled a list of issues, some of which are just bugs but the others are more conceptual. After he will have got a good handle of what is happening inside, he will pass that information to Keith for implementation.
   - Evan: In parallel, we need to look at the way <u>IGRF and AACGM</u> are currently implemented, utilising the latest modifications to AACGM by Simon Shepherd. The issue is that the current RST uses outdated coefficients so that the calculated geolocation deviates from the reality more and more.

4. **Miscellaneous**:
   - Evan asked if anyone can replicate his <u>problems with compiling RST due to DLMs</u> from IDL.
   - Keith pointed out that while *github* is convenient for the package development, its <u>distribution has to be done through a designated web page/depository</u> using a simple link rather than combing through numerous development versions on *github*.
   - Keith suggested that we need to develop a <u>simple standardised way of writing package manuals</u> which should be sufficient for outsiders to understand its functionality.
   - Keith also suggested that we need <u>to evaluate convenience and functionality of different tools/platforms for implementing RST</u>. He pointed out that for the data analysis package the calculation speed is not as critical as that for the on-site software. Therefore, we could use more concise, although somewhat slower, languages like Python, IDL or Matlab instead of C. This would be <u>beneficial with respect to debugging and testing</u> because the number of the actual code lines would be significantly smaller. He specifically pointed out that this is not related in any way to DavitPy activities.