6 Month Update Skype Meeting 10/03/2020

**Agenda**

* Round-table summary of activities in last 6 months and plans for next 6 months (approx.)
	+ BGS, BAS, Lancaster, UCL, IC, Reading, Southampton, Edinburgh, Leeds, RAL
	+ Including comments on plans for final year of SWIGS by all, as appropriate
	+ Including comments on papers published, in preparation, and meetings attended (including outreach)
* Any other meetings, opportunities and parallel activities we can benefit from, or support?
	+ RAS Discussion Meeting offered for Spring 2021
	+ ESWW session(s) 2020 and 2021?
	+ Special journal issue (2021)?
	+ Industry forum (e.g. with Met Office plus industry representatives) meeting (2021)?
* AOB
	+ Date and location of next annual workshop (9-11 September in Leeds)

**BGS Activities in last ~6 months**

WP2

Done:

* Roll out of systems continues – west Scotland, Lancaster
* Literature survey around ground conductivity

WP4

Power Grid

Done:

* Update of grid model – more transformers, lines, transformer details
	+ Reveals that published NG data are not reliable in some locations
* Dissolved Gas Analysis of March 2015 storm reveals little obvious SW signal in the dataset from 8 transformers suggesting the storm was too small to have an impact – Jim W leading this

To do:

* Continue validation of model/measurements at DMM sites, e.g. Torness power station
* Analyse the propagation of GIC through a network where/when we have 4+ DMM systems deployed

Pipelines

Done:

* Detailed model of gas high pressure pipeline network, with standard pipe parameters

To do:

* Refine model incorporating true industry data

Railways

Done:

* Further analysis of NR anomaly database- Mike H leading

To do:

* Determine a modelling methodology for GIC in railway systems. Interacting with David Boteler on this (April meeting planned). Little in scientific or even engineering literature. Issues are that GIC pops up in track signalling and traction control networks and there can be interaction between these systems, depending on network design and this differs country to country.
* Atkins suggested that we should look into measuring GIC in association with Network Rail – Jim W leading this

Meetings

* September 2019 annual meeting
	+ Summary of meeting is available
* ESWW Topical Discussion Meeting themed on SWIGS
	+ Summary of meeting is available
* Public:
	+ Lyell Centre Open Day Edinburgh (Sep)
	+ Royal Met Society of Edinburgh (Dec – Ellen Clarke)
	+ Yorkshire Geological Survey (Jan – David Kerridge)
	+ Astronomical Society of Edinburgh (Mar – Alan Thomson)
* Papers
	+ *DMM measurements (Space Weather in review – Juliane Huebert et al)*
	+ *New Zealand GIC (Space Weather to be submitted – Daniel MacManus et al)*
	+ Campanyà, J., Gallagher, P.T., Blake, S.P., Gibbs, M., Jackson, D., **Beggan, C.D**., **Richardson, G.S**., Hogg, C., 2019. Modeling geoelectric fields in Ireland and the UK for space weather applications. *Space Weather*, 17 (2). 216-237. <https://doi.org/10.1029/2018SW001999>
	+ Campanyà, J., Gallagher, P.T., Blake, S.P., Gibbs, M., Jackson, D., **Beggan, C.D**., **Richardson, G.S**., Hogg, C., 2019. Modeling geoelectric fields in Ireland and the UK for space weather applications. *Space Weather*, 17 (2). 216-237. <https://doi.org/10.1029/2018SW001999>
	+ Oughton, Edward J., **Hapgood, Mike, Richardson, Gemma S., Beggan, Ciaran D., Thomson, Alan W.P.**, Gibbs, Mark, Burnett, Catherine, Gaunt, C. Trevor, Trichas, Markos, Dada, Rabia, Horne, Richard B., 2019. A risk assessment framework for the socio-economic impacts of electricity transmission infrastructure failure due to space weather: an application to the United Kingdom. Risk Analysis, 39 (5). 1022-1043. <https://doi.org/10.1111/risa.13229>
	+ **Rogers, N.C., Wild, J.A., Eastoe, E.F.**, Gjerloev, J.W. and **Thomson, A.W.P.**, 2020. A global climatological model of extreme geomagnetic field fluctuations. J. Space Weather Space Clim. 10, 5. <https://doi.org/10.1051/swsc/2020008>
	+ **Thomson, A**., 2019. Space weather: northern lights and technology hazard. The Geographer, pp 27, summer edition, Royal Scottish Geographical Society. (<https://www.rsgs.org/Handlers/Download.ashx?IDMF=a7e5473e-b952-4cf0-9b0e-71dbb693a296>)

Other Upcoming or Suggested Meeting Sessions and Publications

* RAS discussion meeting on ground effects (Spring 2021) has been requested
* ESWW Glasgow (November 2020) session on SWIGS themes has been requested
* AGU Fall and EGU
* Special journal issue? – AGU SW (would likely include external contributions)
* Industry forum? – contact Met Office, GO Science, SEIEG, Mark Prowse to coordinate a round-table in 2021. Maybe tag up with RadSat for impact?
	+ How has worst case scenario changed due to SWIGS research?
	+ Does space weather preparedness strategy need to be revised?