

## Letter about Spread-F work

I am writing this letter to everyone who has expressed an interest in updating the *U.R.S.I. Handbook of Ionogram Interpretation and Reduction* in relation to Spread-F.

### **A quick review.**

The scaling of spread traces (not just Spread-F) is in general, dealt with from paragraph 2.70 on page 40 of UAG-23A.

In UAG-23, Spread-F is dealt with in section 12.31 where the types of Spread-F are detailed as well as INAG proposals for Spread-F classification is given.

Types of Spread-F are described from paragraph 2.80 (pg. 58) of UAG-23 with theoretical examples, rules for typing Spread-F in standard parameter tables, etc. There is also some interesting history given which references the ideal (Spread-F type tables) and the current compromise scheme.

Spread-F is mentioned again on page 75 of UAG-23A where the descriptive letter F is explained with a summary of procedures discussed in earlier sections.

In UAG-50 (high-latitude supplement) we find a good few examples of Spread-F as seen at different stations. While they are all interesting, they do not all provide an example or guidance of how to select the type or apply scaling.

INAG-42 contains a reference collection of ionograms from high latitude observatories that contain in some cases Spread-F characteristics. These ionograms are in general scaled with type classification and division into groups.

The IPS scaling conventions introduces flags (not to be confused with types) which are apparently not advocated by the URSI (in 1996 anyway).

### **My view**

As someone who has not been involved in the URSI or INAG for very long it appears that in the 1970's, scaling Spread-F was not as developed or mature as scaling many of the other layers. For example, Es has its own chapter but Spread-F is "spread" across UAG-23A and other documents.

Before I can hope to co-ordinate what work is required I need to understand what our final objective looks like. I see two options for the final objective.

## **Options**

Option A We add a supplemental chapter that:

- Pulls together all the threads scattered through previous publications; and
- Adds additional elements to bring the scaling of Spread-F into the 21<sup>st</sup> century.

Option B We write a standalone chapter that focuses only on the Spread-F characteristic and we take the reader from A to Z in that chapter. This work then replaces everything related to Spread-F that is in UAG-23, UAG-23A, UAG-50 and INAG-42 while retaining full backwards compatibility.

## **Your input is required**

I am not equipped to make the decision and require your expert knowledge and experience to guide me.

However, this is not a voting exercise to objectively select between two options. Rather it is an exercise to understand what elements in UAG-23, UAG-23A and UAG-50 or other scaling manuals are:

- Incorrect;
- No longer suitable;
- Misleading or ambiguous;
- Missing; and/or
- Could be done in a better way.

## **Outcome**

Once I know the scale of the problem I can make a judgement about which option to follow and plan accordingly.

Please send me an email with your view on the five elements above. I will consolidate these views, make a list and share them with everyone and hopefully the choice of option will become self-evident.

I ask for your inputs to reach me by 15 September 2024.

Regards

Samuel

samuel.ritchie@comreg.ie

Ends .../