# Extended Abstract
Maximum Usable Frequency and Skip Distance maps over Italy

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Since 1988 the Upper Atmosphere Physics unit of the Istituto Nazionale di Geofisica e Vulcanologia (INGV) provides maps of Maximum Usable Frequency (*MUF*) and *skip distance* over a European area extending in latitude from 34° N to 60° N and in longitude from 5° W to 40° E. Anyhow, these maps suffer the following restrictions: 1) they are provided with two months in advance and so they are not suitable for space weather purposes; 2) they are represented with few isolines; 3) they are centred only on Rome (41.8°N, 12.5°E) and generated in black and white; 4) *MUF* are calculated with a really simple algorithm. In order to overcome these restrictions, a new tool was developed, only for the Italian region, to get both climatological maps (up to three months in advance), and nowcasting maps limited to the sector extending in latitude from 34° N to 48° N and in longitude from 5° E to 20° E, including the Italian territory. In order to achieve a greater accuracy, *MUF* and *skip distance* maps are generated combining for the first time over Italy the Simplified Ionospheric Regional Model (SIRM) [1, 2] and its UPdated version (SIRMUP) [3] with the Lockwood algorithm [4]. Climatological maps are generated every hour on the basis of the predicted 12-months smoothed sunspot number. Nowcasting maps are generated every 15 minutes exploiting *fo*F2 and *M*(3000)F2 data autoscaled at the ionospheric stations of Rome and Gibilmanna (37.6° N, 14.0° E). Nowcasting maps (Figure 1) let High Frequency users know in quasi real-time the radio propagation conditions over Italy. This turns out to be very valuable in terms of a reliable radio link planning, especially in case of adverse space weather conditions.
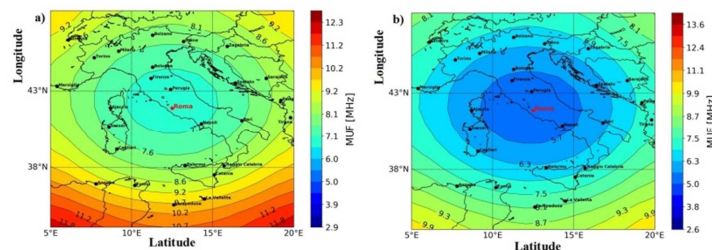
Figure 1. Example of *MUF* and *skip distance* nowcasting maps centred on Rome on a) 13 March 1989 at 12:00 UT and on b) 2 October 2013 at 09:00 UT

References

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