

MEETING MINUTES
Working Group 4 –Santander´s Meeting
Cost Action 15211 ELECTRONET

Period: Start day: 2018, January 24th End day: 2018, January 26th
Venue: Universidad de Cantabria & Spanish Agency of Meteorology
City: Santander, Spain

The main goal of the WG-IV meeting was related to the creation of a glossary and a handbook where the main concepts and available literature on AEF effects on humans and other biological systems be collected by WG-IV members

In this sense, the objectives of the meeting were achieved considering

- Glossary creation and identification of gaps on the study of AEF impacts on Biology
- To define the WG-IV main research lines for future development in the action
- To elaborate list of recommendations for sensor development

WEDNESDAY January 24th [Glossary and Handbook](#)

Welcome to WG-IV COST Action members by the Vicerrector of Research and Innovation of the University of Cantabria



During this day WG-IV members worked on a draft of the Glossary that is in process of elaboration with more than 200 key basic concepts that are required to develop future



research on AEF impacts on Biology.

Submitted terms has been primarily revised and corrected. New terms have been added and some eliminated due to existing redundancies or inconsistencies. In some cases, specific comments have been added to the on line Glossary for authors to correct some aspects on the definition and a list of recommendations has been presented for the second version of the Glossary.

Some of recommendations for the definition of concepts were:

- Avoiding copy/paste actions for the definition of terms
- Try to define or redefine concepts considering the specific aims of the COST action
- Not to include references that are not easily accessible
- Try to adjust each term definition to a template like
 1. To offer a general definition of the term first
 2. Include different acceptations of the term later on if there are
 3. To specify references (papers, books) about the term which are easily accessible on line.
 4. In some case, Figures can be included if they are useful to clarify the meaning of the term

EXAMPLE

Term: Distress

General definition:

- Psychological distress

References: <https://www.ncbi.nlm.nih.gov/pubmed/15009358>

- Physiological distress

References:

- Biometeorological distress

References:

THURSDAY, January 25th Defining WG-IV specific research lines in the COST frame

During this session there were three keynote speakers who spoke about three different



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potential research lines in the WG-IV. The first keynote speaker, Prof. Luis Santiago Quindos Poncela (picture on the left) who is an expert on Radon impacts on health, presented a talk titled: *“Radon in the new basic safety standard”*. A second keynote speaker was Daniel Robert (right picture), from Bristol University, introduced in the WG-IV the study of the existing interactions between animals and AEL attending to the mechanisms of these interactions in relation to how electroreception in terrestrial animals happens and the role of bees as biological sensors of AEL under an evolutionary approach. Dr. Dominic Roye contributed to the meeting with a presentation titled *“Circulation Weather Types (CWT) as a key tool for studying the interaction between AEF and Human Health”* in which a biometeorological and climatic approach of the study of AEF in relation to respiratory diseases based on statistical modelling was proposed.



Moreover, during this session, WG-IV members who attended the meeting contributed with individual presentations that can be found at the COST action webpage. These individual presentations started by the description by Michel Cifra of the conceptual map where proposed WG-IV research lines should be framed



The rest of members contributed with their own presentations with a diverse list of topics such as endogenous light emission from organisms, atmospheric factors causing oxidation, ionizing radiation, oxidative processes and effects in bio-systems, electrical properties of tissues, redox processes in soils, exposure systems, the role of temperature on unfolding proteins, electroporation, mapping of radioactive substances, atmospheric electrical charge and geometry, electrical discharges and the origin of life, ions concentration and mental diseases, potential gradient and migraines, fair weather vertical current... In conclusion, a brief list of



topics was defined (still open) for future research development in WG-IV:

1. Spatial distribution of radon and its potential impacts on human health.
2. Mechanisms of AEF in Biology
3. Evolutionary approach of the study of AEL in living organisms
4. Circulation weather types and potential gradient
5. Eh link to Potential Gradient (PG)
6. Multiscale dosimetry
7. Natural variations and lag effects definition in Biology relation to AEF

FRIDAY January 26th **Measuring AEF and impacts on Biology**

This session took place at the Delegation of the Spanish Agency of Meteorology (AEMET) in the city of Santander. The different invited speakers of this session were mainly focused on the topics of “*Atmospheric measurement of charged nanomaterials*” and “*Technical approaches for measuring electrical properties of nanoparticles*”. It was confirmed the relevance of different nanomaterials in the atmosphere and its relation to human health.



Different devices were presented by keynote speakers to measure the amount and charge of nanoparticles and different questions raised in relation to the parameters are needed to be measured for the topics to be studied in WG-IV.





The regional delegate of the Spanish Agency of Meteorology, José Luis Arce, presented to the participants the instrumentation used for measuring meteorological variables and offered the institution to locate or install any experimental device we consider could be useful for our research.

Submitted by Chair of WG-IV

Dr. Pablo Fernandez de Arroyabe



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