

*Research Program on Acquisition and
Analysis of Signals
PAAS-UN*

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Link: www.paas.unal.edu.co



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Lightning Discharge



Objectives and Stage of the research program

- #Measurements of lightning parameters in Tropical Zone by means of a Lightning Location System (11 sensors) and an Experimental Station.
- #Comparison with lightning parameters obtained in other latitudes.
- #Application to:
 - Knowledge of lightning parameters variation with latitude
 - Lightning protection of building and dangerous utilities
 - Development of new electrical equipments
 - Power Quality





RECMA

Colombian Lightning Location System

ISA - U.N. - EEPPM

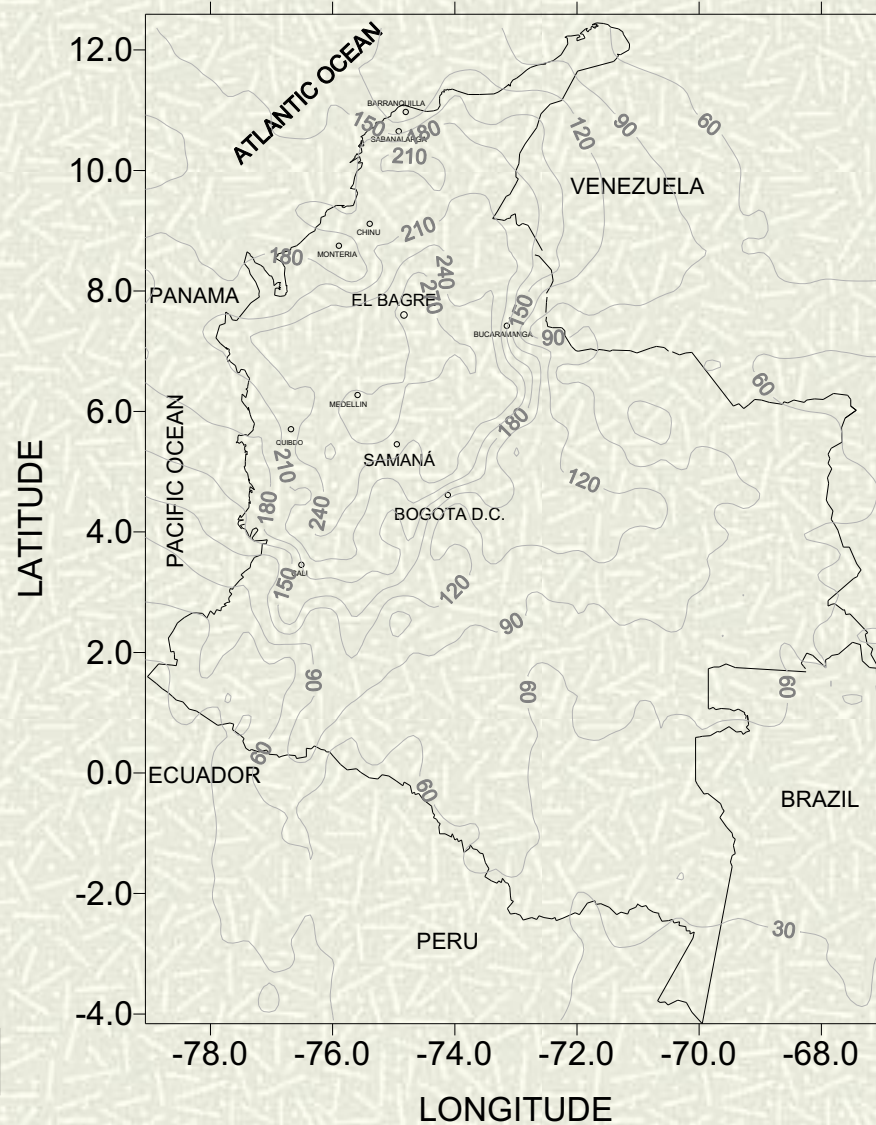
Lightning Experimental Station (Ilyapa) in Colombia



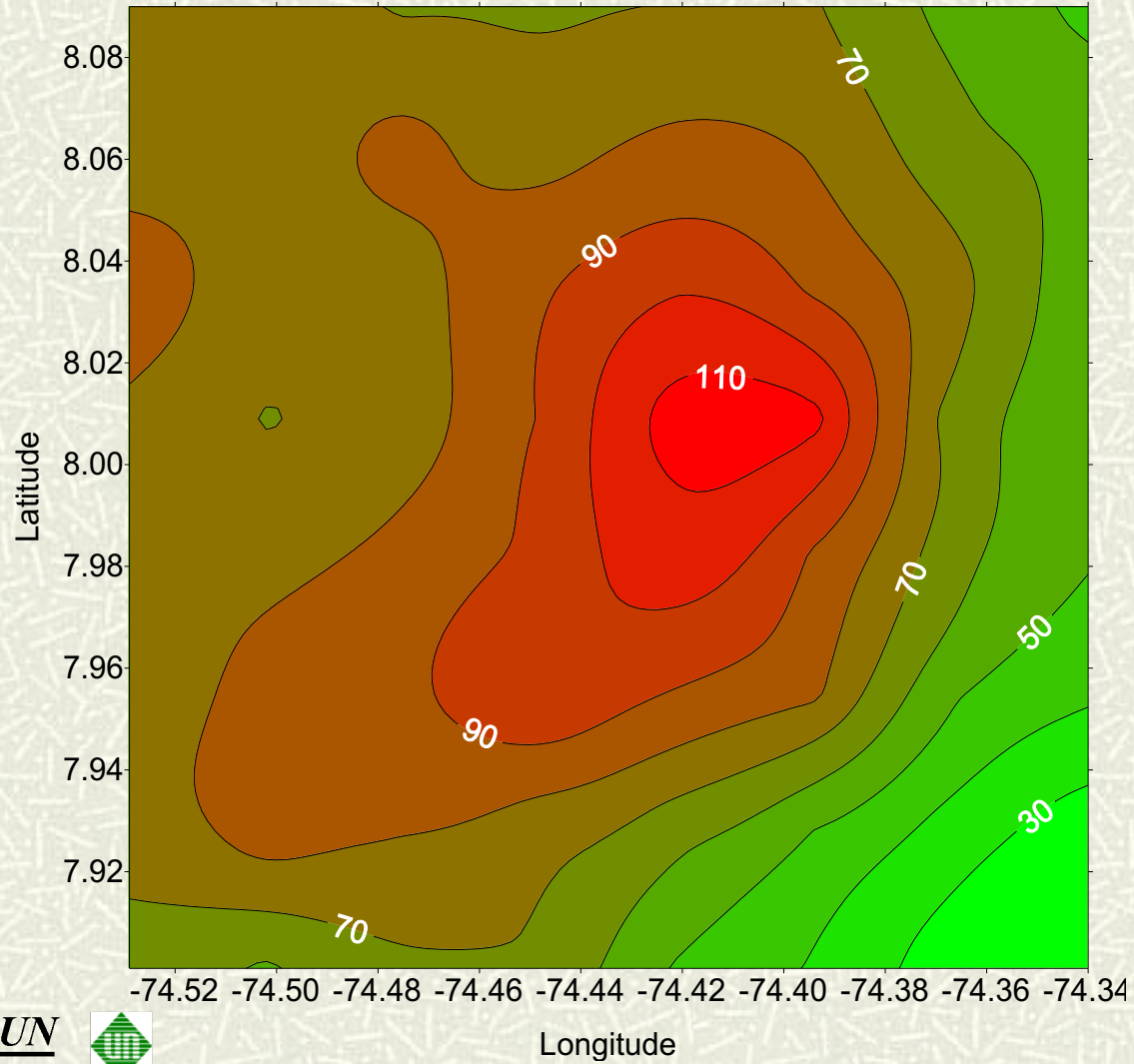
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Example of results



Example of Results



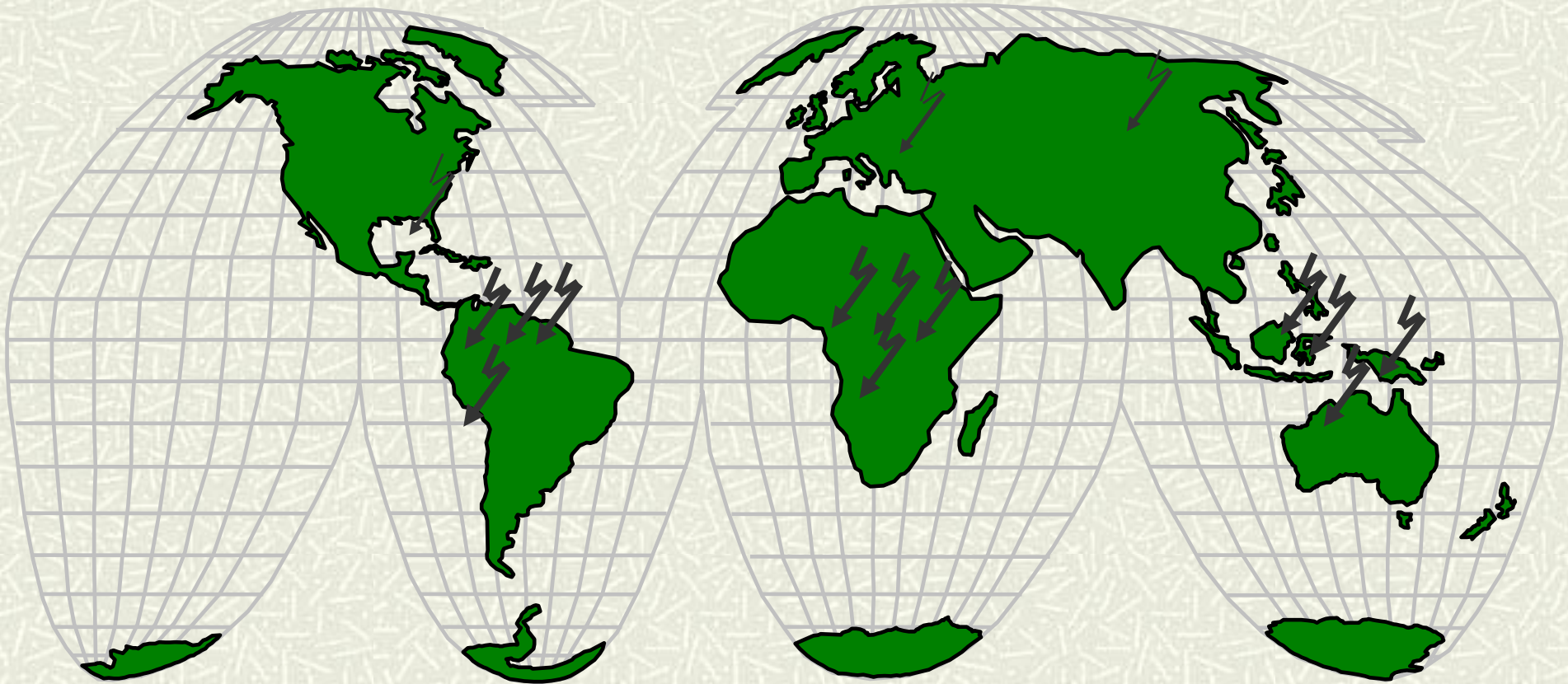
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Longitude

Application to research:

“atmospheric electric activity takes place with great concentration between the tropics”



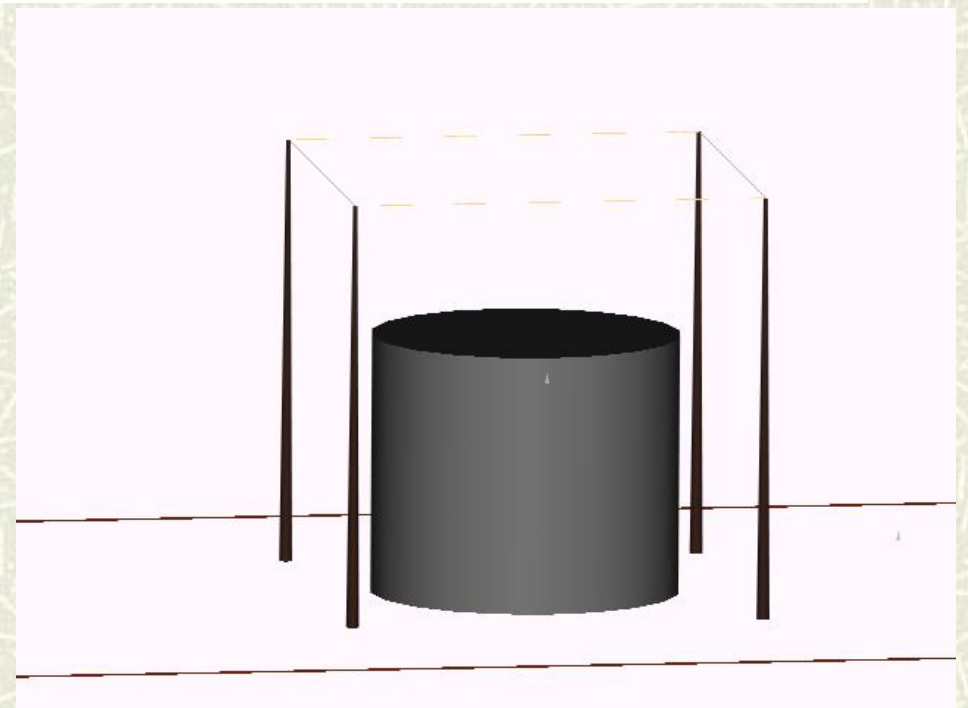
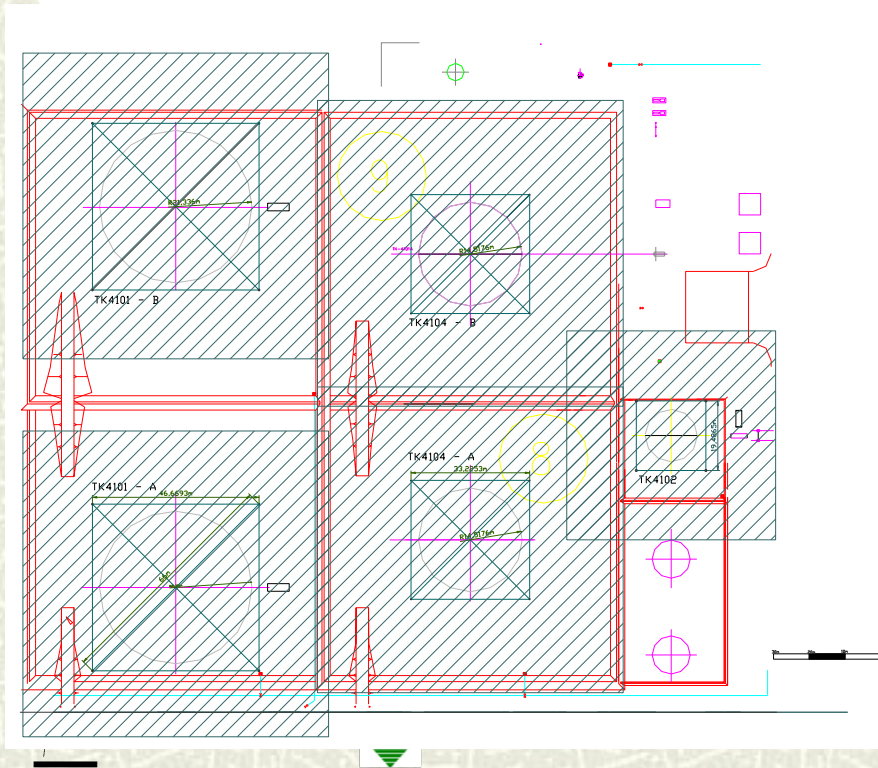
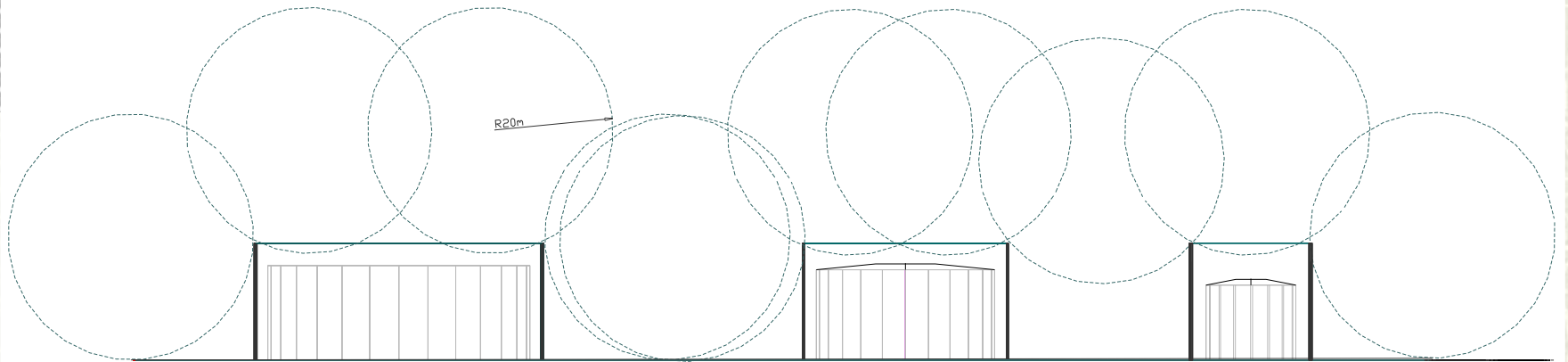
Application to new design of electrical equipment



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Application to protection of Petroleum utilities





Research Group PAAS - UN

20 years of continuous research work and a group constituted by:

#1 Principal Researcher

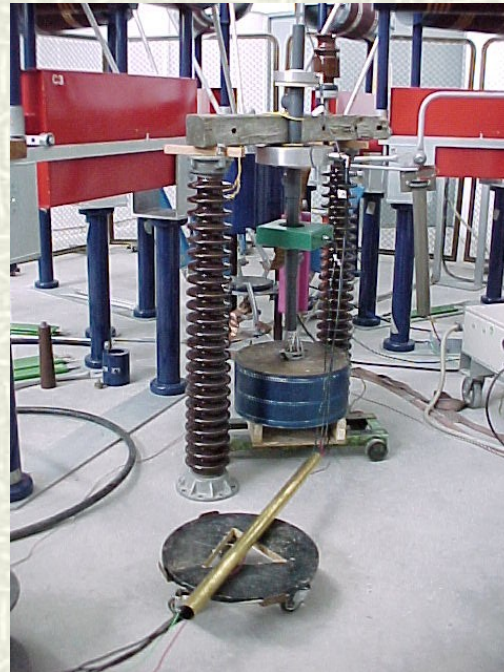
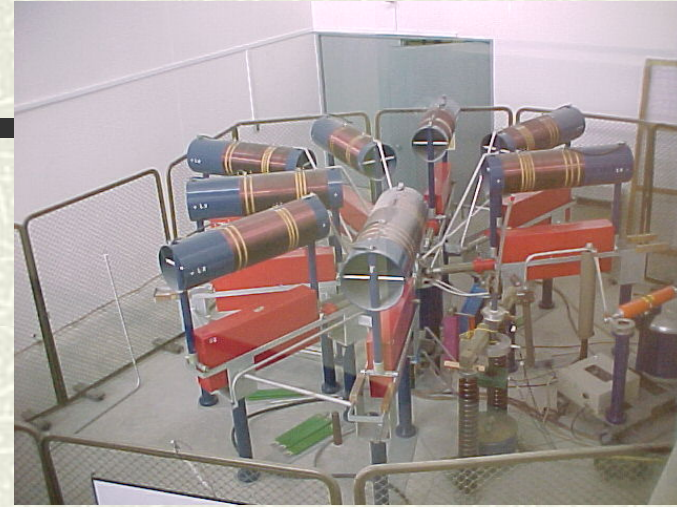
#3 Co – researcher

#8 Research assistant (PhD. + MSc.)

#15 Students of BSc. Thesis



Infrastructure



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Participation in international forums

- International Council on Large Electric Systems – CIGRE (Europe)-
Member of WG.33.01
- International Conference on Lightning Protection – ICLP (Europe) -
Speaker
- International Symposium on High Voltage – ISH (Europe – Canada) -
Speaker
- International Workshop on Physic of Lightning – IWPL (Europe –
Japan) - Speaker
- International Symposium on Winter Lightning – ISWL
- IEEE I&CPS Technical Conference (USA) – Member and Speaker
- International Symposium on Lightning Discharge – SIPDA (Brazil) -
Speaker
- International Symposium on Power Quality – SICEL (Colombia) -
Organizer





Collaborators

In the USA:

- Prof. Earle Williams – MIT, Mass.
- Dr. Walter A. Petersen, Department of Atmospheric Science, Colorado State University.
- Dr. Ken Cummins, Global Atmospheric Inc.





Collaborators

In Latin-American:

- Prof. Dr. Silverio Visacro. Federal University of Minas Gerais – Brazil.
- Dr. Carlos Romualdo Torres
Institut of Electrical Research (IIE), Cuernavaca,
Mexico.
- Dr. Miguel Castro ,
Center of Research and Electrical Test (CIPEL),Cuba





Collaborators

In Europe:

- # Prof. Dra. Maria Teresa Correia –
University of Lisbon, Portugal
- # Prof. Dr. Carlo Alberto Nucci – University
of Bologna, Italy
- # Prof. Dr. Blas Hermoso – Public University
of Navarra, Spain





Challenges

Due to not networking infrastructure available it is difficult to interchange enormous lightning data or maps.





Benefits

With an advanced networking infrastructure it is obtained a best Efficiency in transmission and a major Capacity to interchange very large files of lightning data.

