DARA Annual Network Meeting
Ekudemi Conference Centre South Africa, 2-4 May 2018

Activities in MADAGASCAR

Prof. Solofoarisoa RAKOTONIAINA
University of Antananarivo

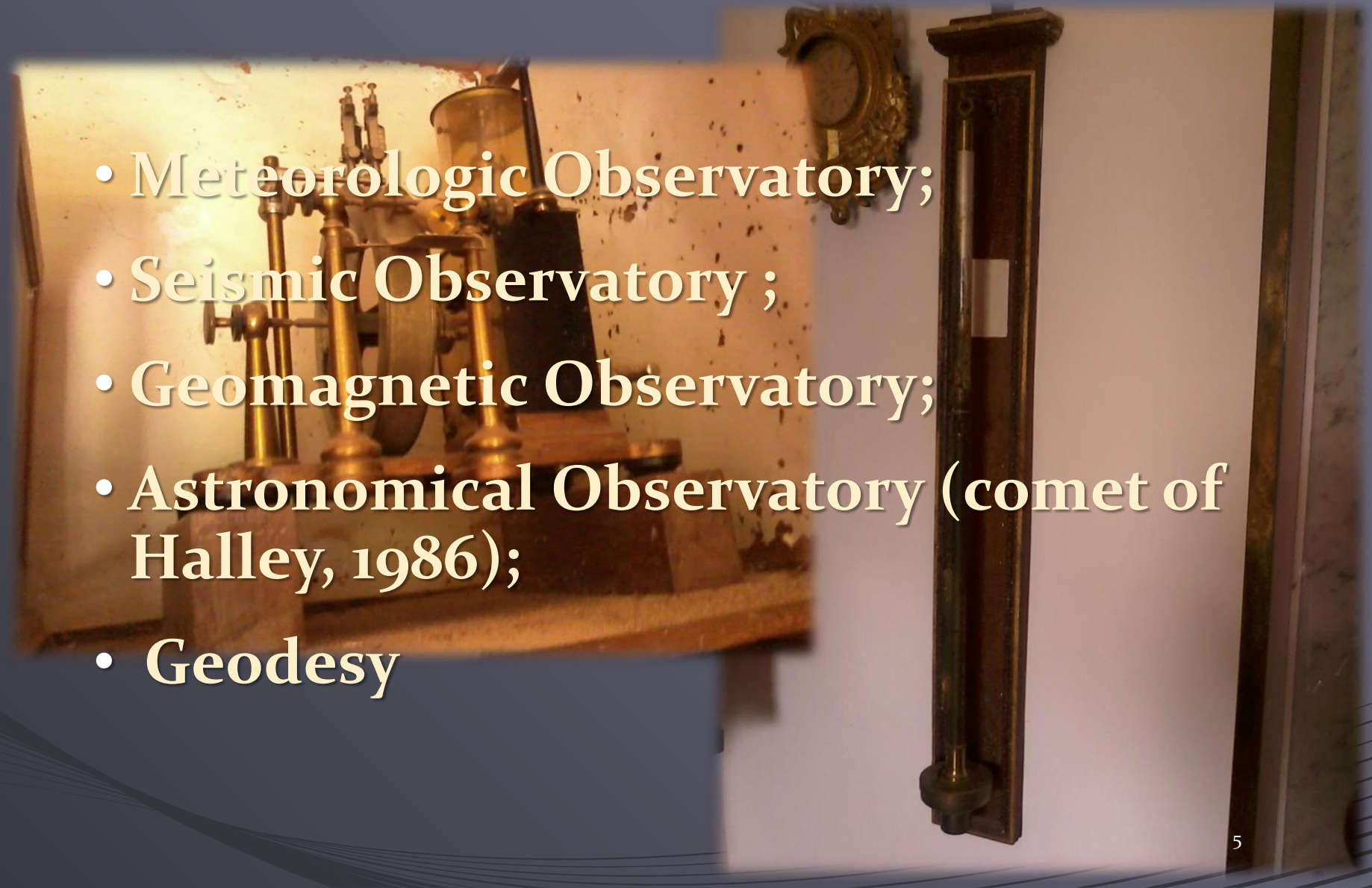
Outlines

- IOGA (**I**nstitute and **O**bservatory of **G**eophysics of **A**ntananarivo), University of Antananarivo : Host institution for the DARA project
- Astrophysics and Astronomy programme, Department of Physics , Faculty of Science, University of Antananarivo

IOGA : 129 years of scientific activities

First building of Observatory in 1889

First scientific center of Madagascar



- Meteorologic Observatory;
- Seismic Observatory ;
- Geomagnetic Observatory;
- Astronomical Observatory (comet of Halley, 1986);
- Geodesy

1988

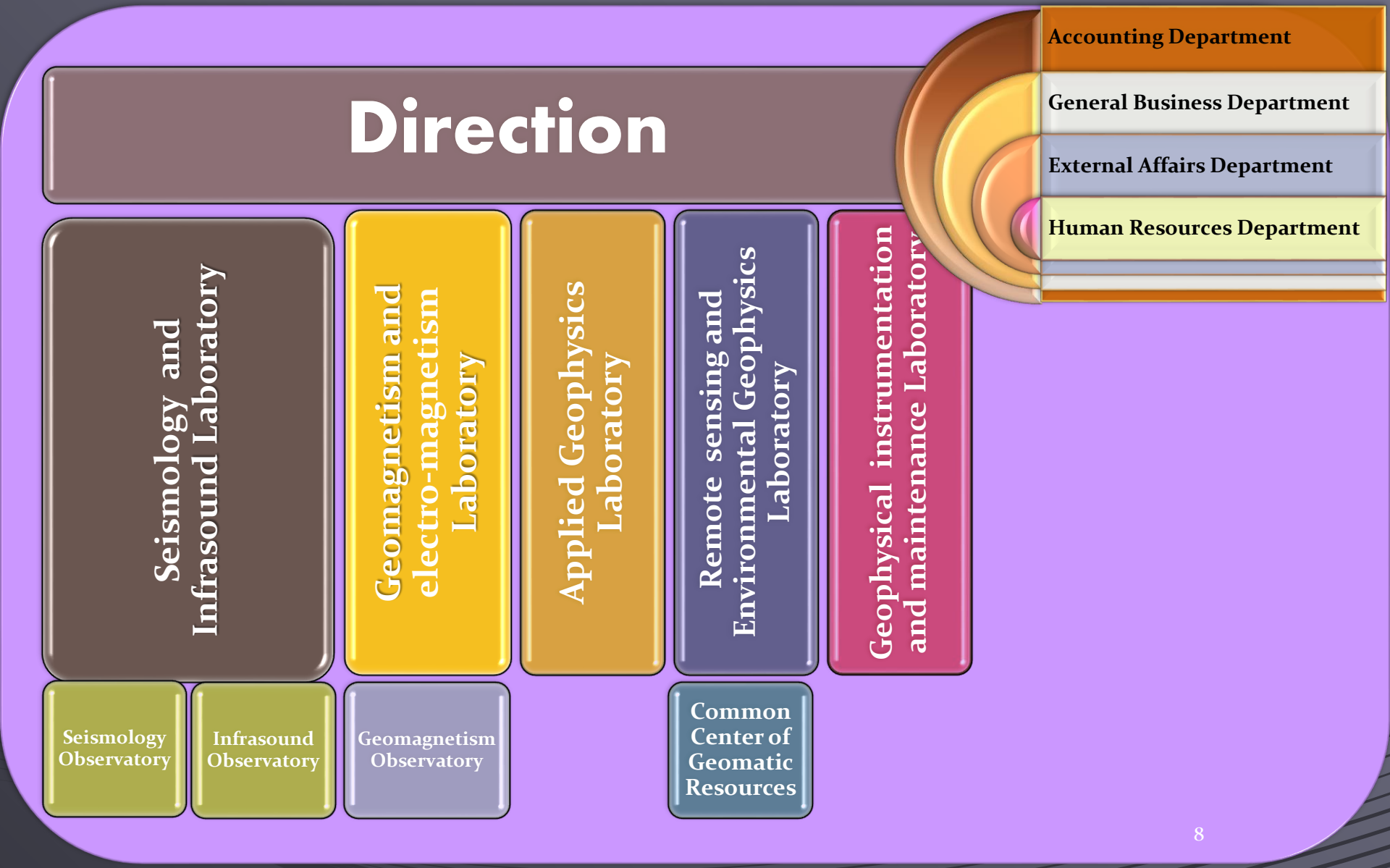
Change of name : Institute & Observatory of Geophysics of Antananarivo (IOGA) ;

Direct attached to the University of Antananarivo ;

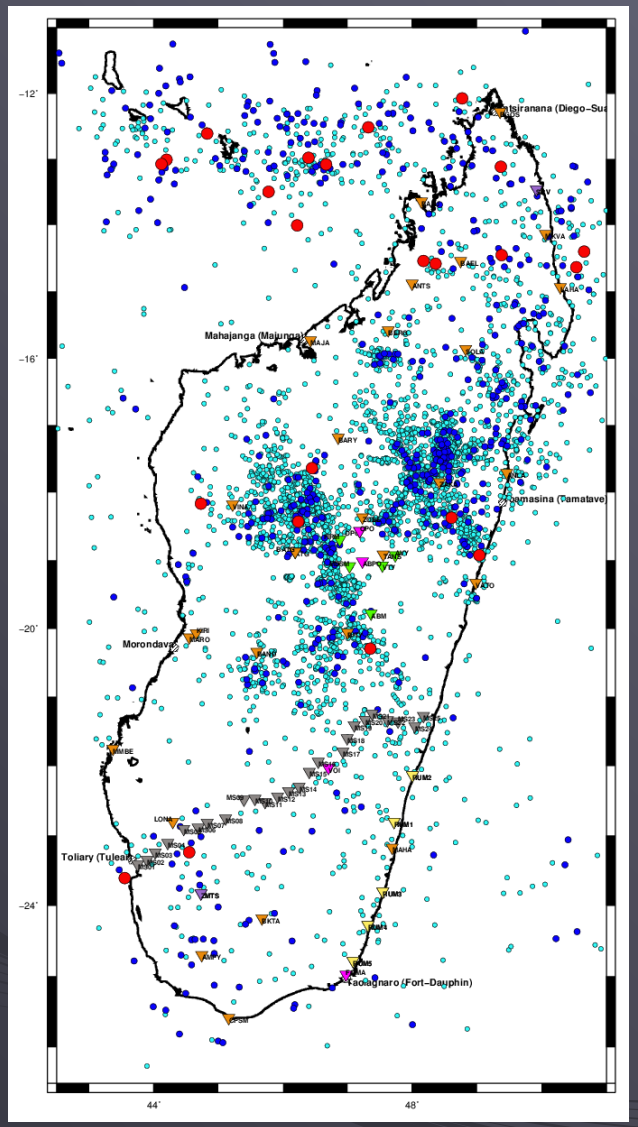
Mooved to the digital era

Extension of the IOGA

Organizational Chart



LSI (Seismology and Infrasound Lab)



Seismology

- Nuclear test monitoring (CTBTO);
- Seismicity map;
- Tsunami warning

Infrasound

- Nuclear test monitoring;
- Environmental study (atmospheric study, climate change);
- Volcano monitoring for aircraft security

LGE (Geomagnetism and Electromagnetism Lab)

- Air navigation;
- Magnetic prospecting;
- Geomagnetic reference observatory

LGA (Applied Geophysics Lab)

- Contribution of Geophysics to the recognition of the subsoil (Deposit + Structural)
- Prospecting of the basement
  - Hydrogeological research, study of the potentiality of groundwater;
  - Assessment of deposits;
  - Diagnosis and geotechnical test

LGET (Environmental Geophysics and Remote Sensing Lab)

- Aims : Remote sensing and digital image processing and applications, GIS
- Current fields of research :
  - Flood detection (/TIGER);
  - Environmental change detection;
  - Ecosystem accounting for natural capital (Land used, Water, Ca/ GDN, CEPF, SEP2D, PEER);
  - Risk management (Flood, fire ,drought, agriculture /MESA-SADC)

LIGM (Geophysics instrumentation and maintenance)

- Maintenance of geophysics equipments
- Design of measurement equipment (in collaboration with the others labs : LSI, LGA, LGE)

Astrophysics and Astronomy Programme

- Masters degree created in the frame of SKA project
- Physics Dpt., Faculty of Science, University of Antananarivo
- Outgoing Head : Prof. Minoson Rakotomalala
- Ingoing Head : Dr. Hery Zo Randrianandraina
- Between 5-10 students in each cohort
- 4^{th} cohort

Astrophysics and Astronomy Programme (AEA) (cont'd)

	Physics and Applications dpt									
Semester	FIELDS									
S10	AEA	DYACO	ENRG	MPE	PHG	PMR	PSPE	MSP	PNAE	PHE
S9										
S8										
S7	Common semester									

2nd cohort (2015-2016)

- 8 / 76 : 10,52 % percentage of students choosing Astrophysics field among all students registered in Physics

Actual DARA students (2017-2018 cohort)

- Cindy A.(ENS: Physics)
- Julio A. (Astrophysics)
- Rijatiana B. (IOGA : Geophysics)
- Deralaza R. (Astrophysics)
- Sambatriniaina R.(Astrophysics)
- Ny Anja R. (ENS : Physics)
- Mendrika R. (ENS : Physics)
- Toky R. (IOGA : Geophysics)
- Princy R. (Astrophysics)
- Sandra R. (IOGA : Geophysics)

4 females and 6 males

Basic Training Unit 1 (13-24 Nov 2017)
Prof. Claude C., Univ Cape Town SA
Dr. Zara R., Univ Cape Town SA

Actual DARA students (2017-2018 cohort) cont'd

Basic Training Computer Course at IOGA (12-16 Feb 2018)
Dr. Krishna G., Dr. John P., Dr Daniel M. (CHPC- SA)

Students graduated with MSc. at the University of Antananarivo

- First cohort : 08
- Second cohort : 03

DARA ongoing MSc. student

Miora ANDRIANTSARALAZA, University of Manchester : « A radio HR diagram – towards the SKA »

Partners: University of Manchester, UK and University of Cape Town, SA.

Supervisors: Albert Zijlstra & Keith Grainge (Univ. Manchester), Patricia Whitelock (SKA- SA)

Ongoing graduated students

8 graduated students based in SA :

- Nandrianina (MSc. University of Cape Town)
- Liantsoa (MSc. University of Cape Town)
- Mika (PhD University of Cape Town)
- …

Capacity building

- Princy and Sambatra (Ethiopia, International School for Young Astronomers, ISYA, 2017);
- Haja and Elia (Cape Town, Big Data SKA, 2017);
- Julio (Mauritius, Big Data and Machine Learning JEDI workshop, 2017);
- Julio and Sambatra (SA, Deep Learning, 2017);
- Haja (SA, SETI AIMS, 2017);
- Gloria and Claude (Egypt, ISYA, 2018),…

MASS (**M**alagasy **A**stronomy and **S**pace **S**cience) association

Aknowledgments

- Warm thanks to SKA and DARA projects to include Madagascar in Phase 2

Projects names

- UNICEF
- OCHA-UN
- TIGER
- GDN (Global Development Network)
- MESA-SADC (Monitoring of Environment and Security in Africa)
- CTBTO (Comprehensive nuclear Test-Ban Treaty Organization)
- Ambatovy
- CEPF (Critical Ecosystem Partnership Funds)
- SEP2D (Sud Expert Plantes Développement Durable)
- PEER (Partnerships for Enhanced Engagement in Research)
- …