

Task Team I:

EOP/SOP sounding of the atmosphere

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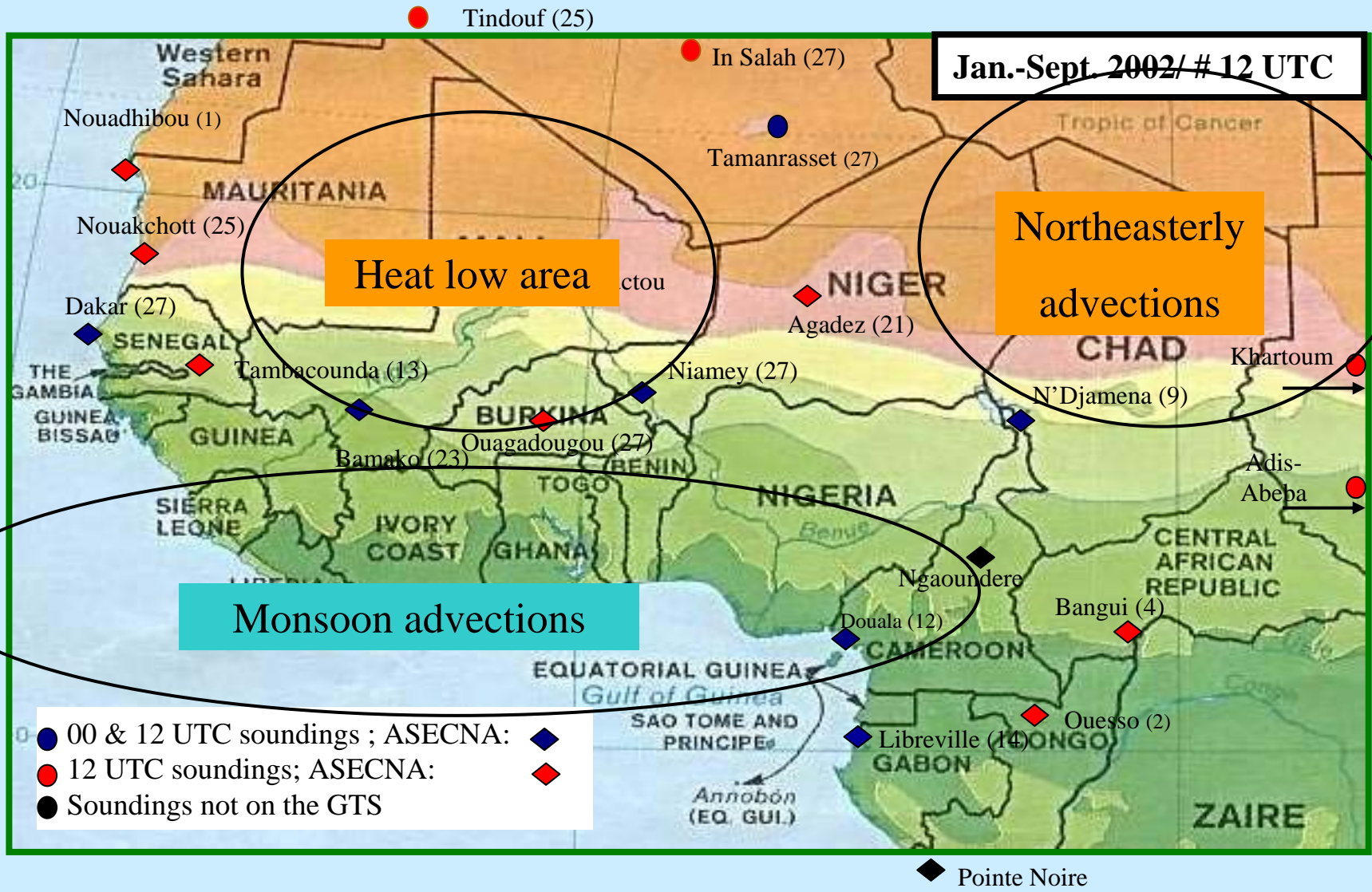
1. Overarching goal
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Overarching Goal

To assist in development & maintenance of a coordinated network of radiosonde, PILOT balloon, VHF/UHF and GPS Total Columnar Water Vapour (TCWV) stations during the AMMA SOP and EOP periods and beyond to address specific AMMA scientific objectives for atmospheric research (e.g. reliable model analyses, physical process studies) and to foster environmental monitoring of the continent and the downstream Atlantic Ocean.



The Pre-AMMA radiosonde network

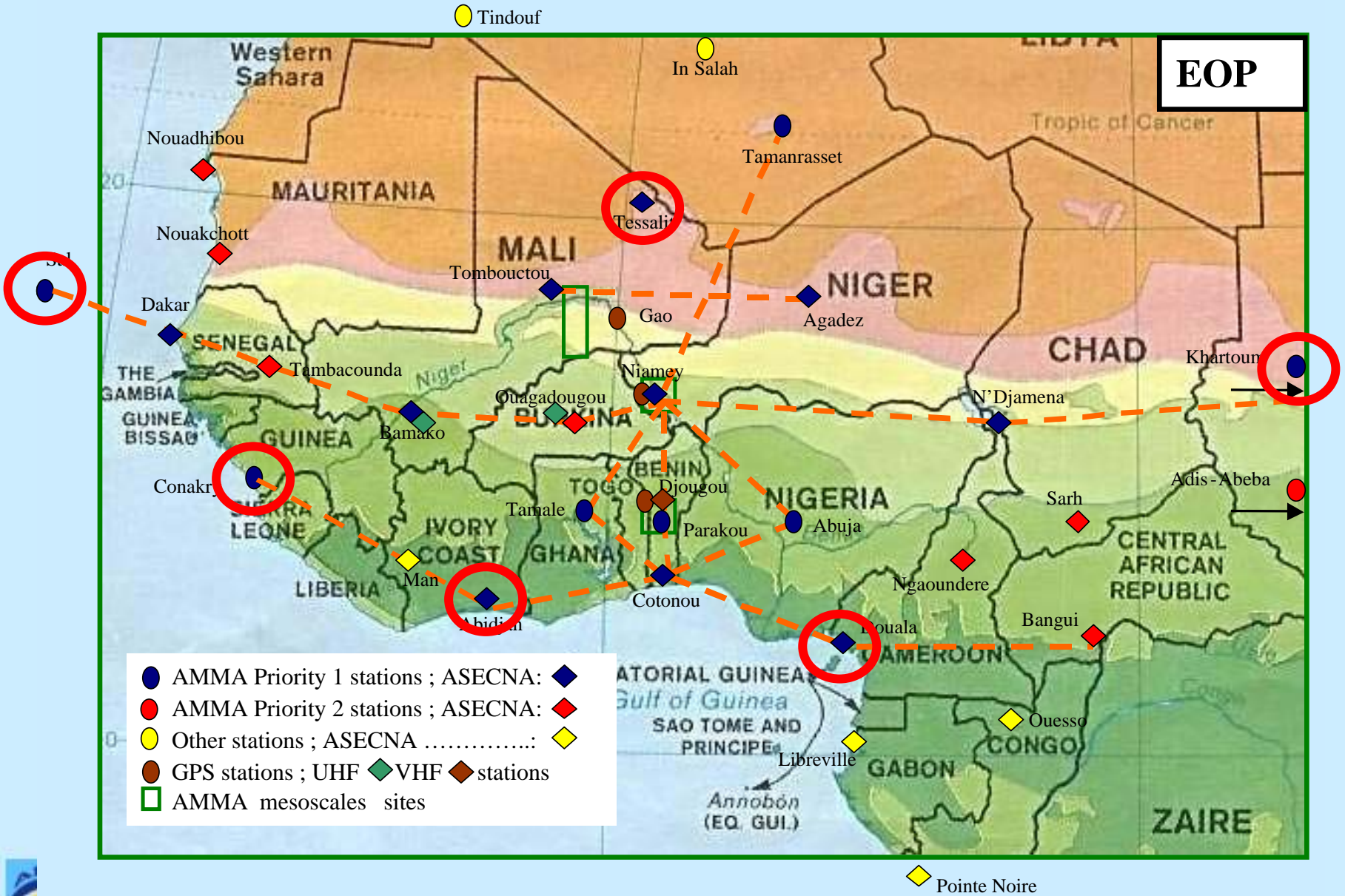


Problems in the Pre-AMMA balloon network


- Absent coastal stations west of Douala (Abidjan is silent since the June 2001 accident)
- Some station experienced communication problems (e.g. Ngaoundere, Cotonou/PIBAL)
- Some stations run out of consumables, especially the support of the national PIBAL networks went down
- Vaisala announced the fading out of RS80 sondes on 1 August 2005, and many countries had/have to replace or upgrade their old ground (receiving) stations



The AMMA EOP (2005-2007)



EOP Strategy

- Definition of four groups of RS arrays –identified as “EOP instruments”:
 - **Monsoon array**: Studies on moisture inflow, seasonal cycle and intraseasonal variability, ITCZ dynamics
 - **Sahelian array**: Synoptic studies on westward propagating MCSs, slowly westward propagating anomalies related to onset and breaks
 - **Northern stations**: Heat Low and northern AEWs
 - **SOP flux networks** (explained later)
 - First meridional **GPS transect** (Djougou, Niamey, Gao): 15min-1h TCWV data
 -  **ASECNA profiler** in Bamako, Ouaga & Djougou

EOP Strategy

- 17 AMMA-International Priority I (P1) stations have been identified
- 8 AMMA-International Priority II (P2) stations have been identified
- 11 P1 stations have been selected by AMM-EU



EOP Status

• Monsoon array:

- Cotonou operational since early June, but continued GTS transmission problems
- Conakry can be resuscitated temporarily at low cost – with RS80 sondes only
- Resuming of operations at Abidjan is pending on the construction of a new building
- Douala will get a refurbished Digicora II and improved connection to GTS (12/05)
- Note: Tamale, Parakou and Abuja are expected to start operations in January 2006
- Kano has successfully tested – can be operated with old RS80 sondes

• Sahelian array:

- Site visit at Khartoum under way, 2004 soundings, but telecommunication problems
- Ndjamena...
- Niamey, Ouaga, Bamako & Dakar o.k., ground stations will be upgraded until 12/05
- Sal: Present status unknown

• Northern stations:


- Tamanrasset ok, Agadez & Tombouctou to be upgraded + improved GTS connection soon
- Tessalit: unclear if station can be revived (remote location, security,..)



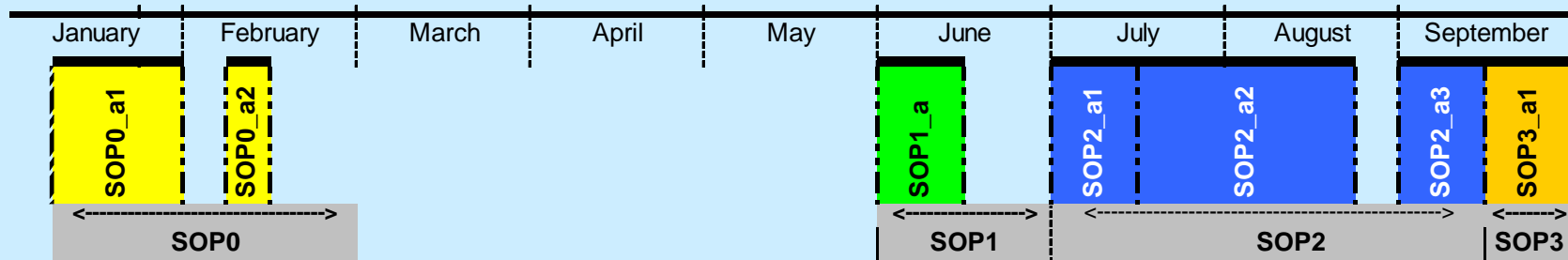
The AMMA SOP network



SOP Strategy

- Definition of 3 SOP radiosonde flux networks:
 - **Southern quadrilateral**: Cotonou, Parakou, Niamey (**ARM, 4 x daily**), Tamale and Abuja
 - **Northern quadrilateral**: Parakou, Niamey, Ouagadougou, Tomobouctou, Agadez/Tahoua
 - **Western quadrilateral**: Bamako, Dakar, Sal, Conakry, Nouakchott
- Second meridional **GPS TCWV transect** (Tamale, Bamako, Tombouctou)
-  **ARM UHF profiler** at Niamey

SOP Strategy (to be discussed now)



- Sounding frequency **southern quadrilateral & northern quadrilateral** during SOP1-3:
4 x daily, plus two periods of ten days 8 x daily (where possible)
- Core stations (Parakou + Niamey) shall perform “responsive” (e.g. aircraft operation due to a MCS event), perhaps suitable upstream stations as well (Tahoua/Agadez) and Abuja during SOP1-3
- Enhanced 4 x daily soundings at Parakou and Agadez (what about Ndjamena?) during SOP1-3



SOP status & problems

- GTS Telecommunication problem needs to be solved (Tamale, Parakou, Abuja and Ngaoundere will be equipped by a DCP by the end of this year)
- Temporary station at Tahoua (site visit under way) using the ASECNA EAMAC school training ground station and Dakar training DCP is unclear
- Not all stations will be capable of doing 8 soundings/day
- Shall consumables be reserved for an EOP 2008 year?
- Detailed consumable planning possible not until the first dates of operation of the new stations are known
- No funding has is available to resuscitate, maintain or enhance the PILOT network



Some logistical considerations

- ASECNA as an AMMA-EU partner is responsible for the upgrading, improved telecommunication and consumable deployment at all of its operational station including Parakou.
- Consumables for Tamale (Ghana) and Abuja (Nigeria) will be purchased through ASECNA
- Infrastructure (Balloon shed, gas generators) and training at Tamale (Ghana) and Abuja (Nigeria) will be managed by the AMMA-EU partner U.Cologne
- DCP purchase and training at Dakar is handled by AMMA-EU partner CNRS
- Station communication is planned through satellite phones (Niamey-Parakou) or national mobile phone systems



Leaders, Core group, Membership

- **Co-chairs:** Serge Janicot (serge.Janicot@lodyc.jussieu.fr) & Andreas Fink (fink@meteo.uni-koeln.de)
- **Core group:** Anton Beljaars (ECMWF), Arona Diedhiou (IRD Niger), Chris Thorncroft (SUNY), Doug Parker (U. Leeds), Francis Dide (DMN Benin), Jean-Blaise Ngamini (ASECNA HQ Dakar)
- **Members:** Ali El Majdoub (ACMAD), Boubacar Madina Diallo (DMN Guinea), Cherif Diop (DMN Senegal), Frank Roux (Laboratoire d'Aerologie, Toulouse), Ismail Fudl El Moula Mohamed (Meteorological Authority, Khartoum), Jean-Luc Redelsperger (CNRM, Toulouse), Mahaman Saloum (ASECNA), Traoré (DMN, Niger), Infeanyi Nnodu (NIMET, Nigeria) Mama Konate (DMN, Mali), Michael Douglas (National Severe Storms Laboratory/NOAA), Mohamed Kadi (DMN, Algeria), Olivier Bock (IPSL, France), Thierry Lebel (IRD), Lamin Mai Touray (Dept of Water Resources, the Gambia), Zinede Minia (Meteorological Department, Ghana), Bernard Campistron (Laboratoire d'Aérologie du CNRS), Mathieu Nuret (Meteo France)