O Clima no Sudoeste de Angola

Carlos Ribeiro

Nídia Loureiro

Sílvio Filipe

João Celestina

Désia Nóbrega

Luis Di Ligório

I CONFERÊNCIA

PENSAR O SUDOESTE

26 E 27 DE SETEMBRO

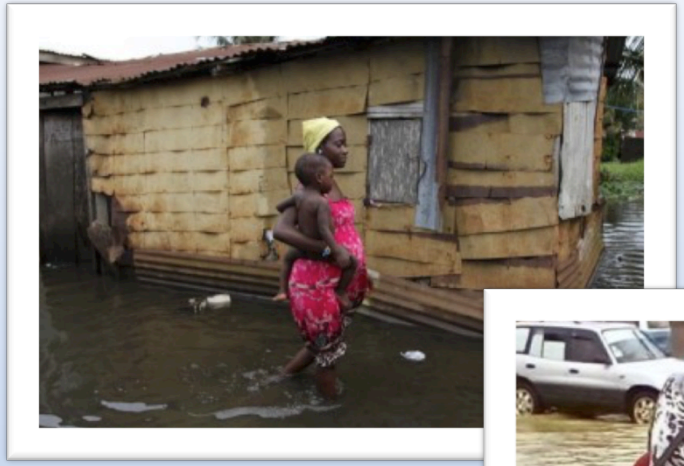
2019

Instituto Superior Politécnico Tundavala

Governo Provincial da Huíla

O Clima no Sudoeste de Angola

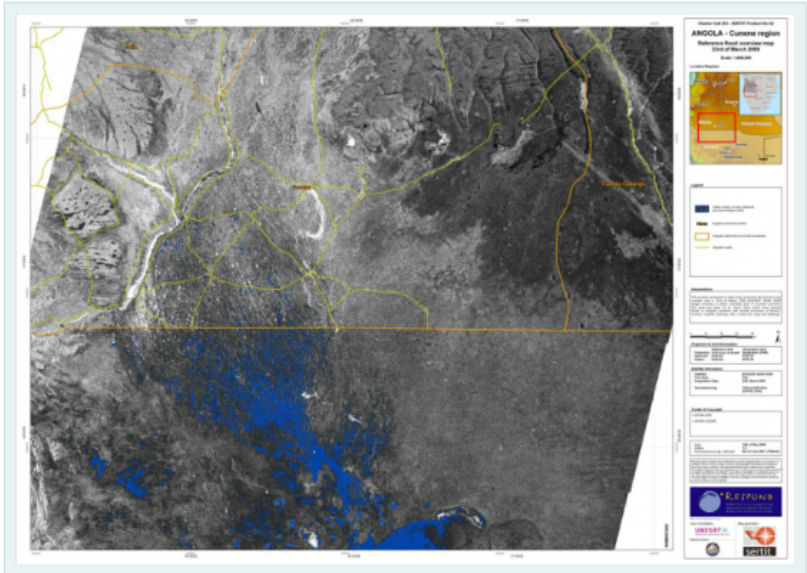
O Clima no Sudoeste de Angola



Angola: Cunene Region - Reference Flood Overview Map 23rd of March 2009

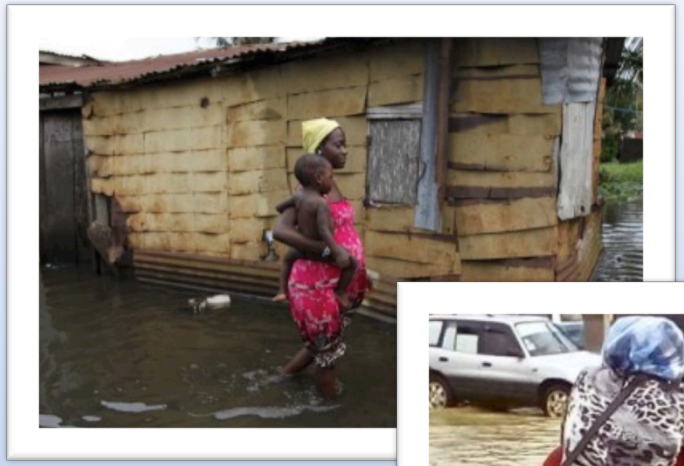
MAP from UNOSAT

Published on 12 May 2009 — View Original



https://angola-online.net/tag/INAMET https://reliefweb.int/map/angola/angola-cunene-region-reference-flood-overview-map-23rd-march-2009

O Clima no Sudoeste de Angola



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05 Aug 2010

Angola: Cunene flood victims to get homes

REPORT from Government of Angola

Published on 05 Aug 2010 — View Original

Luanda - A total of 2,500 economic houses are being built in southern Cunene province, to accommodate the victims of the rains that hit the region over the last three years, Angop learned Thursday in Luanda.
The information was released by the minister of Environment, Fátima Jardim.

The official was answering members of the 5th and 6th Commissions of the National Assembly (Angolan Parliament), under the specialised debates of the reviewed State Budget draft.

According to Fátima Jardim, another measure intended to improve the accommodation of the Cunene population is the adoption in future of local urban steering plans.

https://angola-online.net/tag/INAMET http://floodlist.com/africa/angola-floods-benguela-luanda-huila-zaire-march-2019

O Clima no Sudoeste de Angola

ANGOP
Agência Angola Press

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Wed, 10 Mar 2010 10:00 - Updated Wed, 10 Mar 2010 10:00

Mps assess floods situation in Cunene

Cunene province

Tweet

PRINT CORRECT SEND A- A+

Ondjiva - Angolan parliamentarians with the 4th Commission of the National Assembly are visiting Ondjiva, southern Cunene province, on Wednesday, to assess the damages caused by the floods in the region.

The parliamentary delegation, which is responsible for matters relating to State administration and Local Power, will meet with the local governor, António Didalelwa and with members of the Civil Protection Committee, to assess the level of compliance with the recommendations from the 2009 visit, following the floods of then.

For two days, the Mps will visit the centres sheltering those left homeless, located on the outskirts of Ondjiva city.

Minute to minute

19h23 Economy
Official defends strict management of water resources

19h12 Health
Government reiterates universal health coverage by 2030

18h07 Economy
Spanish company invests USD 180 million in wind energy

17h48 Education
Governor recommends responsibility in IMAM management

https://angola-online.net/tag/INAMET
http://www.angop.ao/angola/en_us/noticias/politica/2010/2/10/Mps-assess-floods-situation-Cunene,40174f0d-84a4-40ec-8154-14e0de35c8ae.html

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22 Mar 2019

Angola – Floods (INAMET, GOVAO, Floodlist, Media) (ECHO Daily Flash of 22 March 2019)

REPORT from European Commission's Directorate-General for European Civil Protection and Humanitarian Aid Operations

Published on 22 Mar 2019 — View Original

- Heavy rains have been affecting western Angola since 16 March, causing floods and resulting in casualties and damage.
- According to media, as of 22 March at 8.00 UTC, the death toll reached 19, of which 16 in Benguela Province and three in Luanda Province. Eight people were reported missing across Huila Province. In addition, media reports destructions and damage: around 30 houses destroyed and 56 damaged across Benguela Province, around 103 houses damaged in Huila Province and a number of houses and public buildings, including health centres and schools, damaged across Luanda Province.
- Over the next 24 hours, moderate to locally heavy rain is forecast over Benguela, Zaire and Luanda Provinces, while the weather conditions are expected to improve over Huila Province.

Ongoing

Primary country: Angola

Content Format: News and Press Release

Language: English

Theme: Shelter and Non-Food Items

Disaster Type: Flood

Vulnerable Groups: IDPs

Related content

ANGOLA
Govt. Angola: Drought victims receive 320 tons of foodstuff 11 Sep 2019

ANGOLA

https://angola-online.net/tag/INAMET https://allafrica.com/stories/201909230732.html

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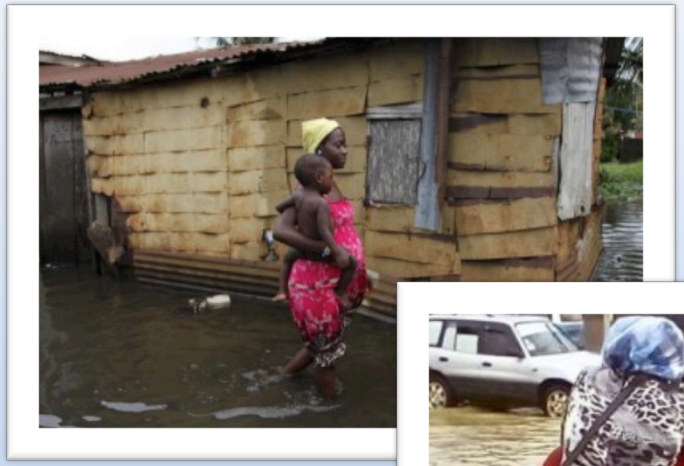

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FloodList

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BREAKING NEWS 2 days ago - Haiti – 2 Dead, 4 Missing After Flash Floods in Ouest Department

Angola – 19 Dead After Floods in Benguela, Luanda, Huíla and Zaire Provinces

21 MARCH, 2019 BY FLOODLIST NEWS IN AFRICA, NEWS

At least 19 people have died and 8 are still missing in Angola after a period of heavy rain brought flooding to the provinces of Benguela, Luanda, Huíla and Zaire.

Benguela Province

Angola News Agency ANGOP reports that at least 16 people died as a result of heavy rains and flooding in Benguela Province that began around 16 March, 2019.

https://angola-online.net/tag/INAMET http://floodlist.com/africa/angola-floods-benguela-luanda-huila-zaire-march-2019

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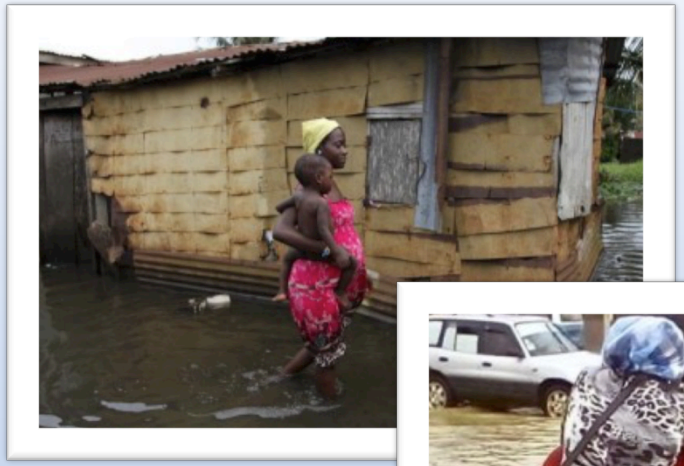

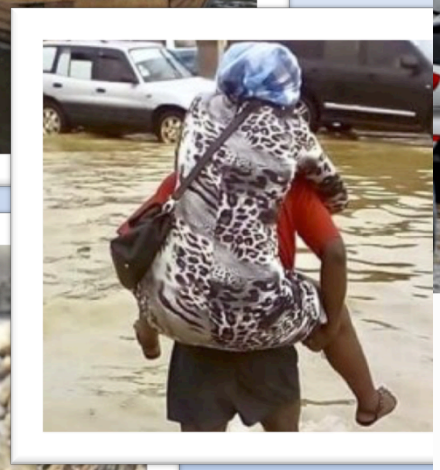

NEWS / ANGOLA

Angola floods kill 11, cause widespread destruction

Deadly floods after heavy rainfall in the north of the country have left thousands homeless.

24 Mar 2017

Eleven people have died and several more are

MORE ON AFRICA

TRENDING

https://angola-online.net/tag/INAMET https://www.aljazeera.com/news/2017/03/angola-floods-kill-11-widespread-destruciton-170324084831333.html

O Clima no Sudoeste de Angola

NEWS / ANGOLA

Angola drought: Millions at risk of starvation

The United Nations says more than two million people in Angola's southern province of Cunene urgently need food and water.

by **Haru Mutasa**

14 May 2019

The United Nations says a severe drought in Angola is putting thousands of children at risk of starvation. Many of them are being treated for malnutrition.

MORE ON AFRICA

Scientists create embryos in bid to save northern white

TRENDING

Macron urges Iran, US talks amid Middle East tensions

At least 20 killed as quake hits Pakistan-administered Kashmir

Germany, UK, France blame Iran for Saudi oil attacks

British MPs to return to work as Johnson faces calls to resign

https://www.aljazeera.com/news/2019/05/angola-drought-millions-risk-starvation-190514095153875.html

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Angola: Drought in Cunene Causes Children's Involvement in Hard Labour

AngolaPress

23 SEPTEMBER 2019

Ondjiva — The drought hitting the southern Cunene Province since October 2018 has gone worse and forced many underage boys and girls, some even younger than fifteen, to get involved in hard physical activities with a view to dealing with the phenomenon and its consequences, such as hunger and thirst.

1 / 1

Cunene: Cattle suffering from the drought

ANGOP has come across such reality in the localities of Oupiakadi, Oshamola, Hehabo and Onamuka and Evale, where one can find many youngsters involved in boreholes digging to find and extract water, which they then carry in containers by their own physical effort as well.

Speaking to ANGOP, some of the children said they are growing weary of the situation of the lack of

https://reliefweb.int/report/angola/angola-floods-inamet-govao-floodlist-media-echo-daily-flash-22-march-2019

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africanews. EN NEWS

NEWS BUSINESS SPORT CULTURE SCIENCE & TECHNOLOGY NO COMMENT PROGRAMMES AFRICA ELECTIONS

Angola: drought puts 2.3 million people at risk

ANGOLA

30/04 - 16:16

A severe drought in Angola has plunged 2.3 million people into a food security crisis with thousands of children being treated for malnutrition, a report compiled by the United Nations children's fund UNICEF said.

It said there had been an inadequate response after below-average and erratic rainfall.

Angolan President João Lourenço declared a state of emergency in January, but UNICEF said the response has been hampered by a lack of funding. The organisation's own action plan for Angola has secured only 28 percent of its intended funding, it said.

YOU MAY ALSO LIKE

U.N. urges Nigeria to address housing crisis and end forced evictions

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https://www.africanews.com/2019/04/30/angola-drought-puts-23-million-people-at-risk//

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Climate change is hitting African farmers the hardest of all

May 12, 2015 6.17am SAST

http://theconversation.com/climate-change-is-hitting-african-farmers-the-hardest-of-all-40845

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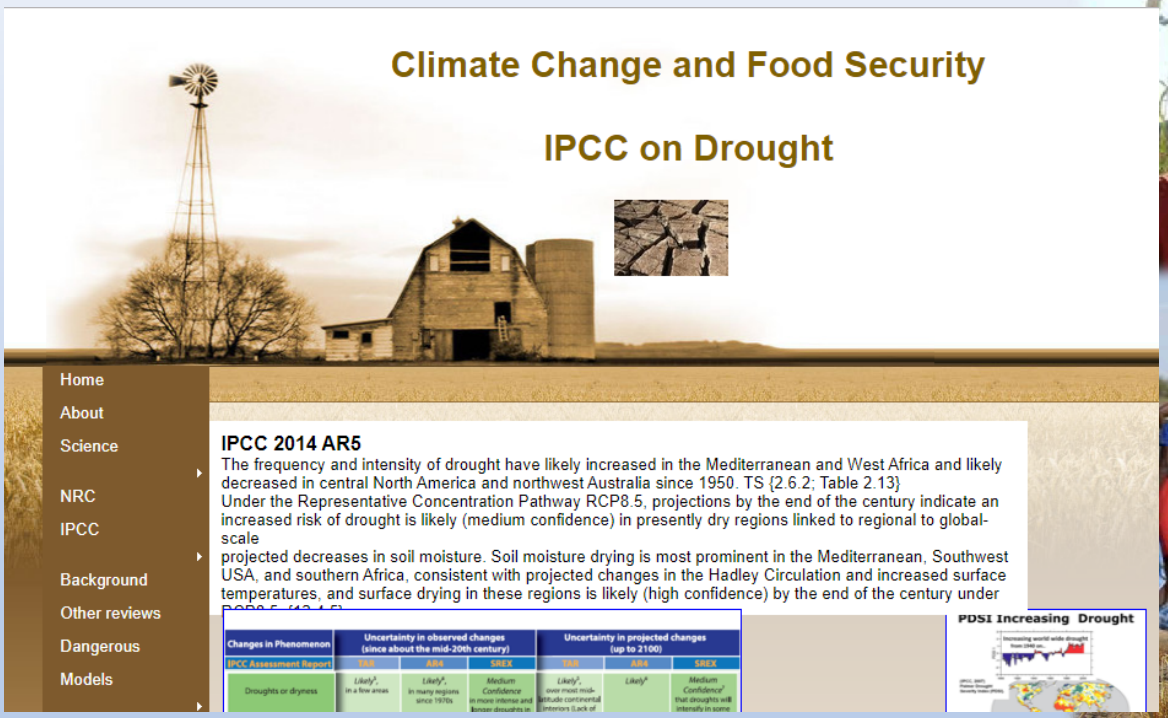

http://www.climatechange-foodsecurity.org/ipcc_drought.html

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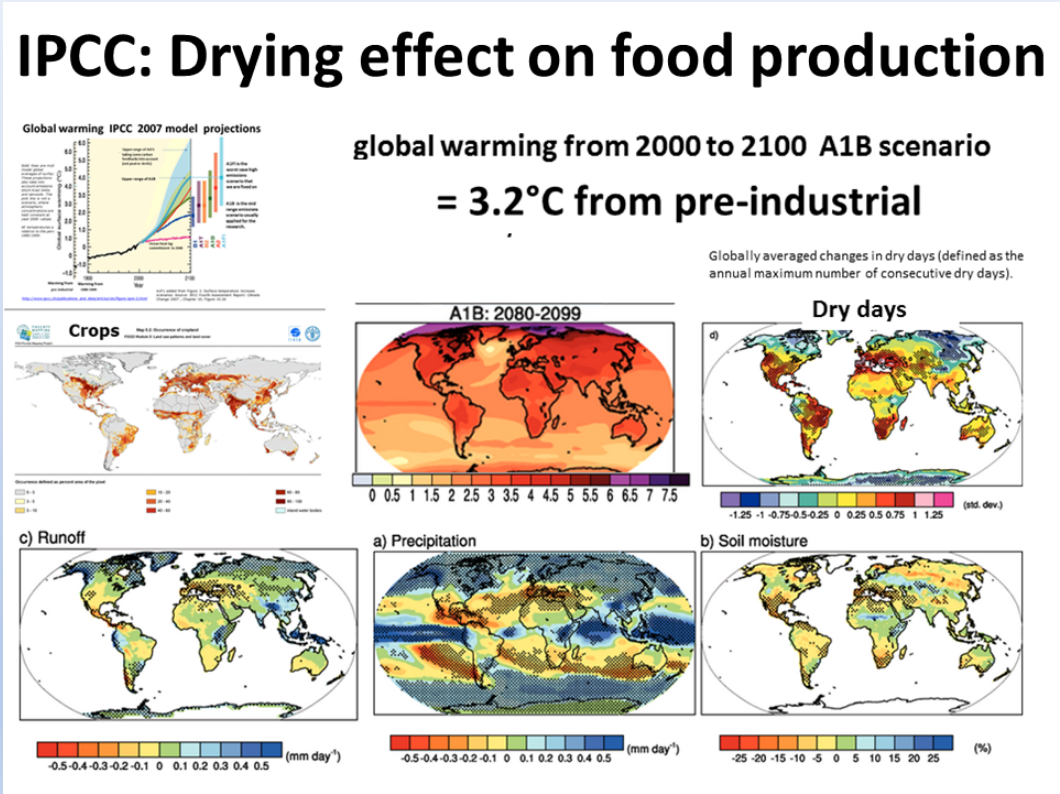

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As Alterações Climáticas

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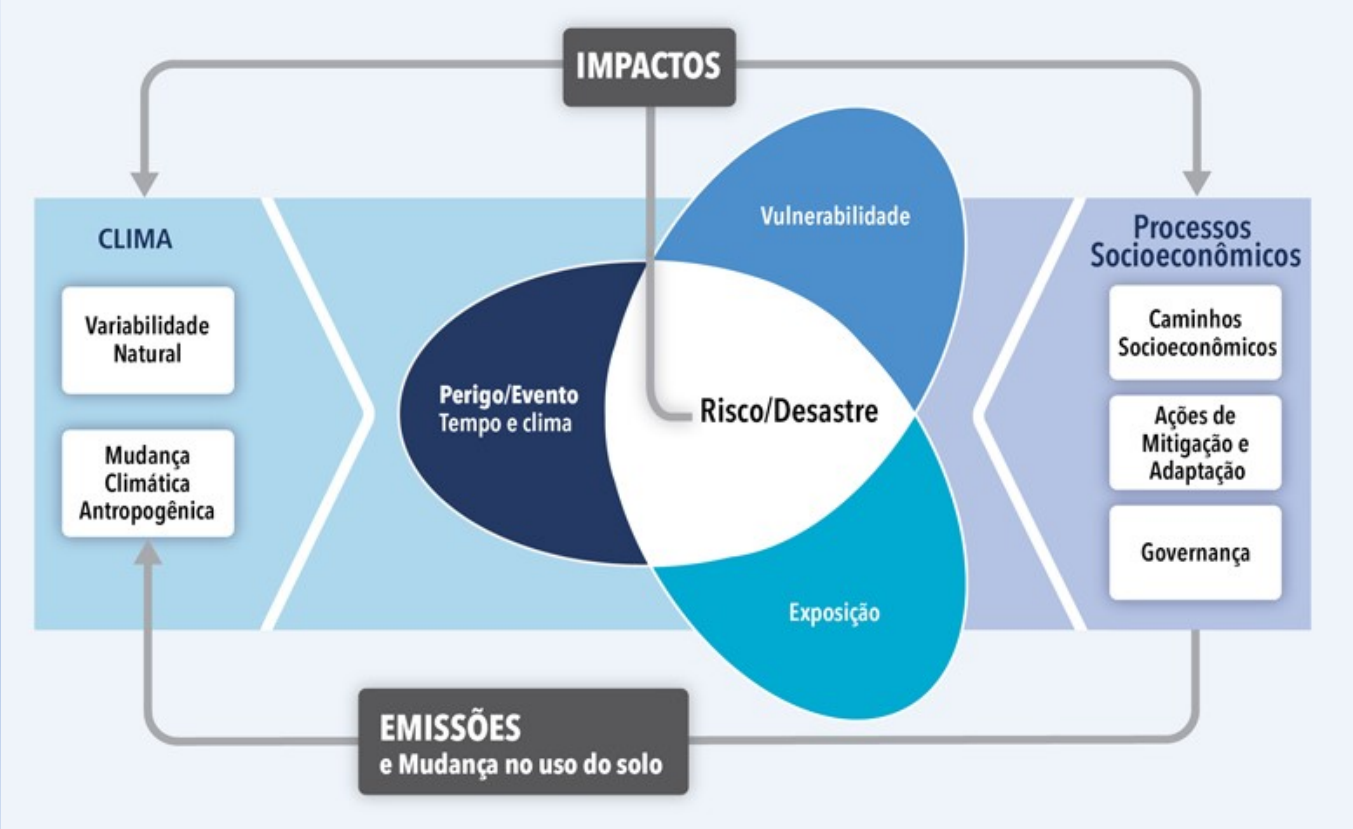
Planos Adaptativos



O Clima no Sudoeste de Angola

Recolha de Dados Meteorológicos

SASSCAL
Southern African Science Service Centre for Climate Change and Adaptive Land Management

INAMET

TUNDAVALA INSTITUTO SUPERIOR POLITÉCNICO

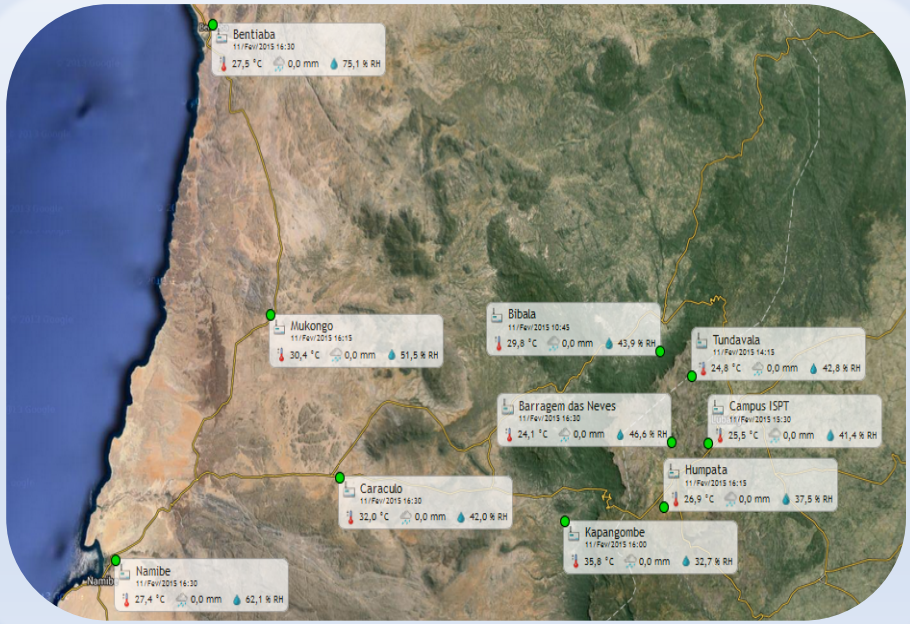
Recolha de bases científicas e observacionais para dar resposta a esta problemática

Estudos focados nas Alterações Climáticas

Observação Meteorológica

1

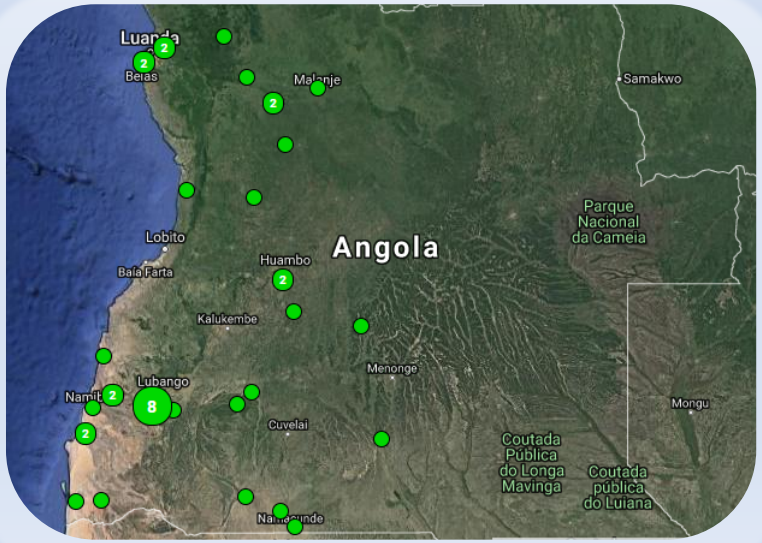
- ✓ Instalação de 10 EMAs na região
- ✓ Monotorização da rede Met.



2

- ✓ Gestão e Capacitação de RH
- ✓ Reabilitação de Estações e Integração na rede Met.

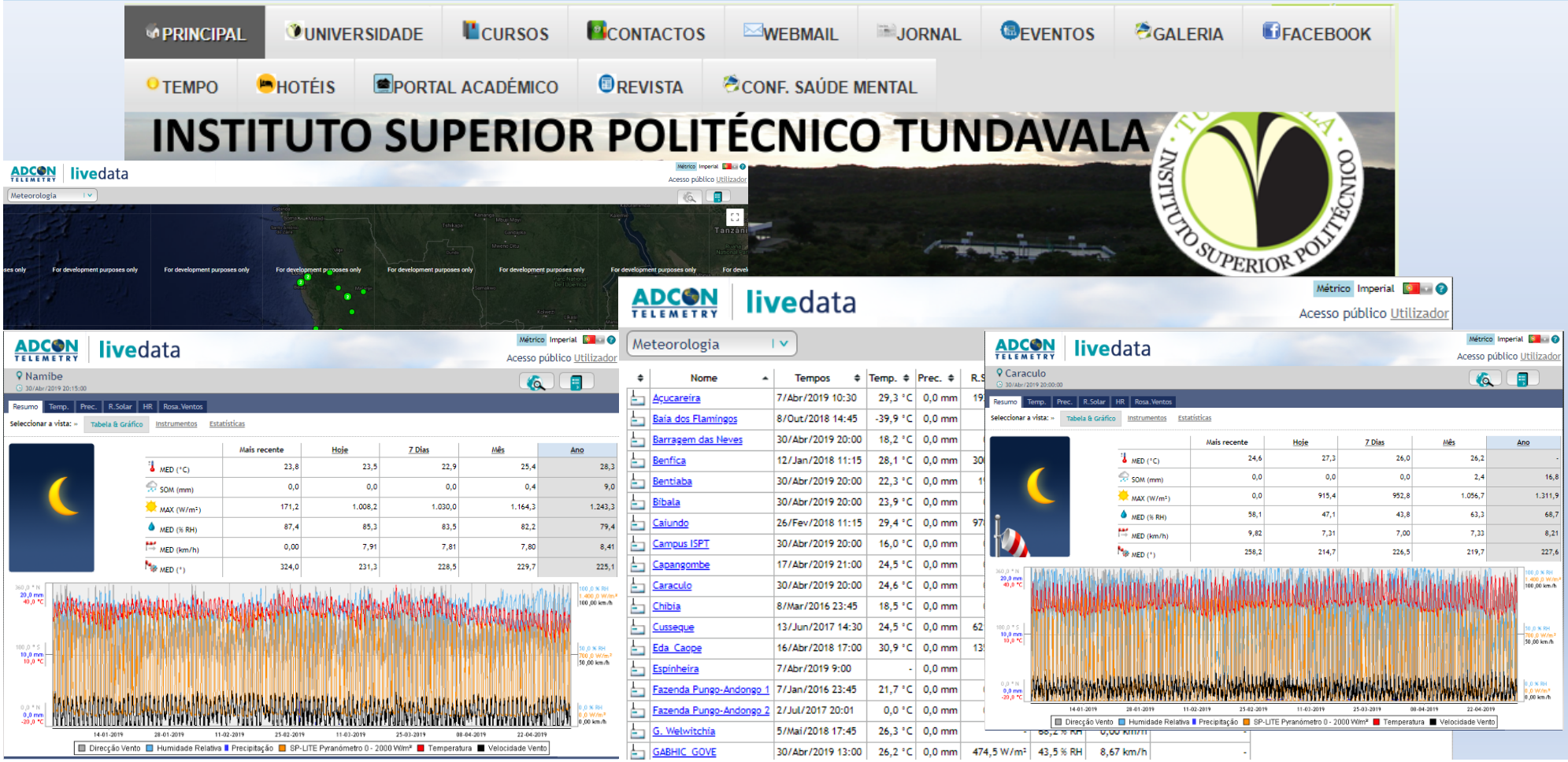
A rede Met. ISPT_SASSSCAL possui 38 Estações.



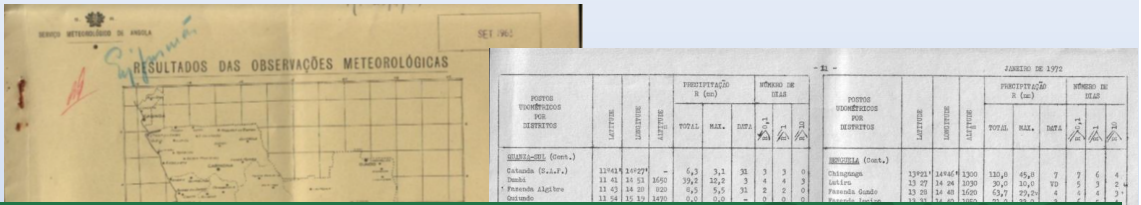
ISPT http://tempo.isptundavala.ed.ao/livedata/map.jsf e **SASSCAL** http://data.sasscal.org/metadata/overview.php?global_search

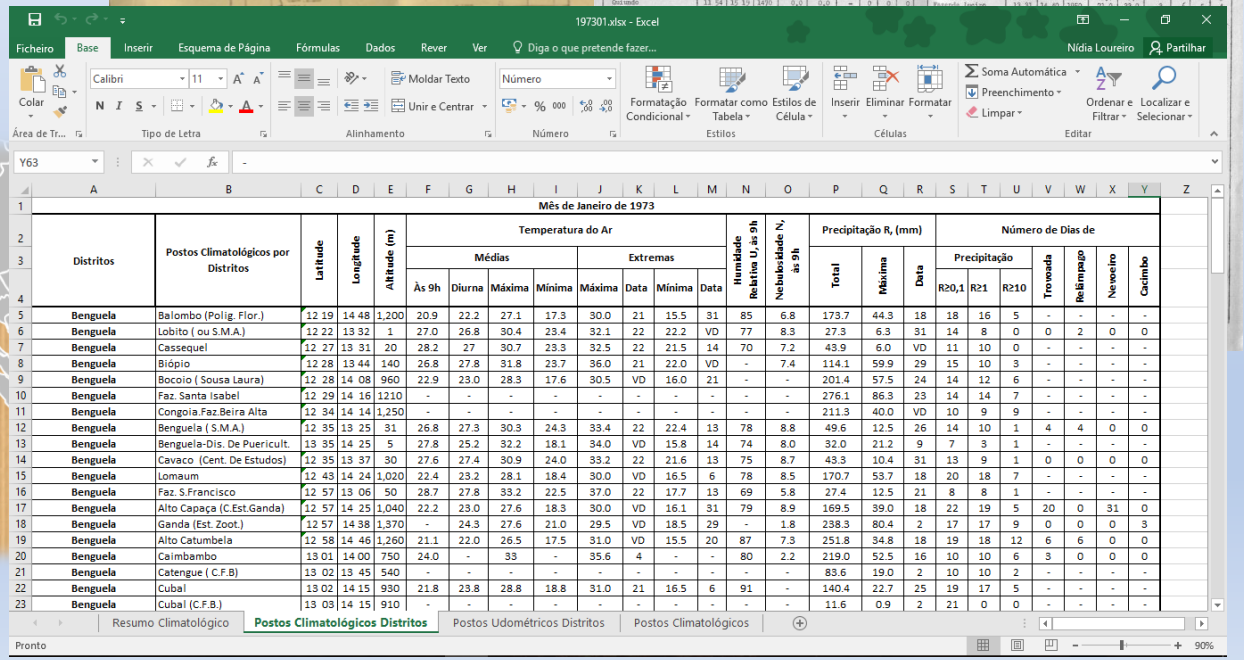
Observação e Transmissão de Dados Meteorológicos em Tempo Real

ISPT http://tempo.isptundavala.ed.ao/livedata/map.jsf



Resgate de Dados Climáticos





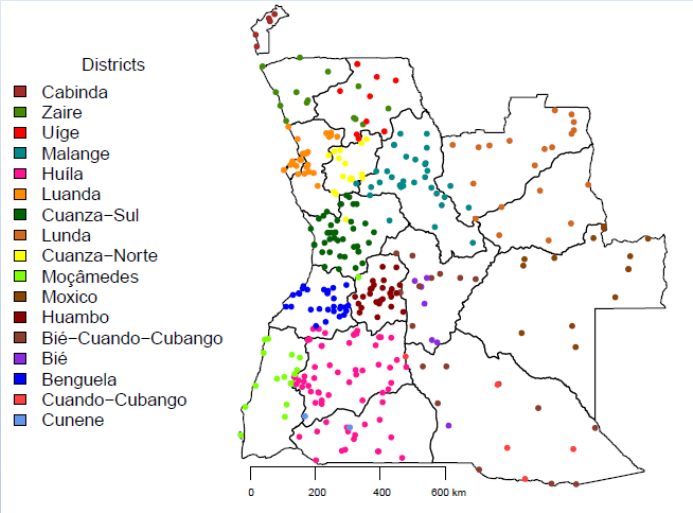
Mês de Janeiro de 1973

	Distritos	Postos Climatológicos por Distritos	Latitude	Longitude	Altitude (m)	Temperatura do Ar – Médias: Às 9h	Diurna	Máxima	Mínima	Extremas: Máxima	Data	Mínima	Data	Humidade Relativa U, às 9h	Nebulosidade N, às 9h	Precipitação R, (mm): Total	Máxima	Data	Número de Dias de Precipitação: R≥0,1	R≥1	R≥10	Trovoada	Relâmpago	Nevoeiro	Cacimbo
5	Benguela	Balombo (Polig. Flor.)	12 19	14 48	1,200	20.9	22.2	27.1	17.3	30.0	21	15.5	31	85	6.8	173.7	44.3	18	18	16	5	-	-	-	-
6	Benguela	Lobito (ou S.M.A.)	12 22	13 32	1	27.0	26.8	30.4	23.4	32.1	22	22.2	VD	77	8.3	27.3	6.3	31	14	8	0	0	2	0	0
7	Benguela	Cassequel	12 27	13 31	20	28.2	27	30.7	23.3	32.5	22	21.5	14	70	7.2	43.9	6.0	VD	11	10	0	-	-	-	-
8	Benguela	Biópio	12 28	13 44	140	26.8	27.8	31.8	23.7	36.0	21	22.0	VD	-	7.4	114.1	59.9	29	15	10	3	-	-	-	-
9	Benguela	Bocoio (Sousa Laura)	12 28	14 08	960	22.9	23.0	28.3	17.6	30.5	VD	16.0	21	-	-	201.4	57.5	24	14	12	6	-	-	-	-
10	Benguela	Faz. Santa Isabel	12 29	14 16	1210	-	-	-	-	-	-	-	-	-	-	276.1	86.3	23	14	14	7	-	-	-	-
11	Benguela	Congoia.Faz.Beira Alta	12 34	14 14	1,250	-	-	-	-	-	-	-	-	-	-	211.3	40.0	VD	10	9	9	-	-	-	-
12	Benguela	Benguela (S.M.A.)	12 35	13 25	31	26.8	27.3	30.3	24.3	33.4	22	22.4	13	78	8.8	49.6	12.5	26	14	10	1	4	4	0	0
13	Benguela	Benguela-Dis. De Puericult.	13 35	14 25	5	27.8	25.2	32.2	18.1	34.0	VD	15.8	14	74	8.0	32.0	21.2	9	7	3	1	-	-	-	-
14	Benguela	Cavaco (Cent. De Estudos)	12 35	13 37	30	27.6	27.4	30.9	24.0	33.2	22	21.6	13	75	8.7	43.3	10.4	31	13	9	1	0	0	0	0
15	Benguela	Lomaum	12 43	14 24	1,020	22.4	23.2	28.1	18.4	30.0	VD	16.5	6	78	8.5	170.7	53.7	18	20	18	7	-	-	-	-
16	Benguela	Faz. S.Francisco	12 57	13 06	50	28.7	27.8	33.2	22.5	37.0	22	17.7	13	69	5.8	27.4	12.5	21	8	8	1	-	-	-	-
17	Benguela	Alto Capaça (C.Est.Ganda)	12 57	14 25	1,040	22.2	23.0	27.6	18.3	30.0	VD	16.1	31	79	8.9	169.5	39.0	18	22	19	5	20	0	31	0
18	Benguela	Ganda (Est. Zoot.)	12 57	14 38	1,370	-	24.3	27.6	21.0	29.5	VD	18.5	29	-	1.8	238.3	80.4	2	17	17	9	0	0	0	3
19	Benguela	Alto Catumbela	12 58	14 46	1,260	21.1	22.0	26.5	17.5	31.0	VD	15.5	20	87	7.3	251.8	34.8	18	19	18	12	6	6	0	0
20	Benguela	Caimbambo	13 01	14 00	750	24.0	-	33	-	35.6	4	-	-	80	2.2	219.0	52.5	16	10	10	6	3	0	0	0
21	Benguela	Catengue (C.F.B)	13 02	13 45	540	-	-	-	-	-	-	-	-	-	-	83.6	19.0	2	10	10	2	-	-	-	-
22	Benguela	Cubal	13 02	14 15	930	21.8	23.8	28.8	18.8	31.0	21	16.5	6	91	-	140.4	22.7	25	19	17	5	-	-	-	-
23	Benguela	Cubal (C.F.B.)	13 03	14 15	910	-	-	-	-	-	-	-	-	-	-	11.6	0.9	2	21	0	0	-	-	-	-

Resgate de Dados Climáticos Históricos

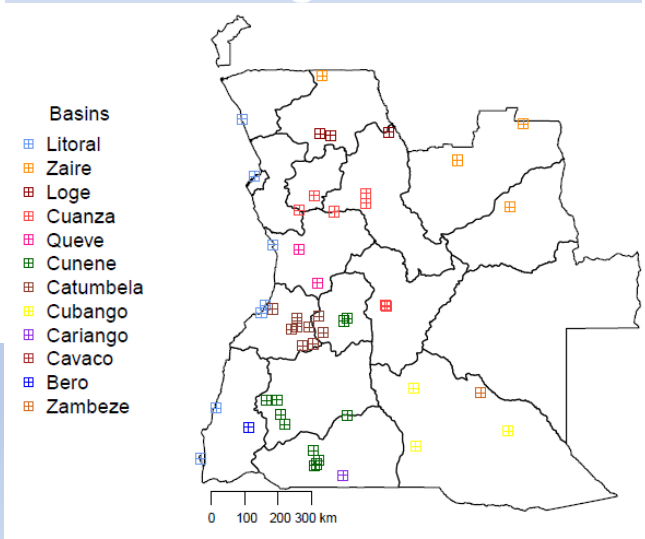
Série de 1961 - 1974

Rede de Estações Climatológicas



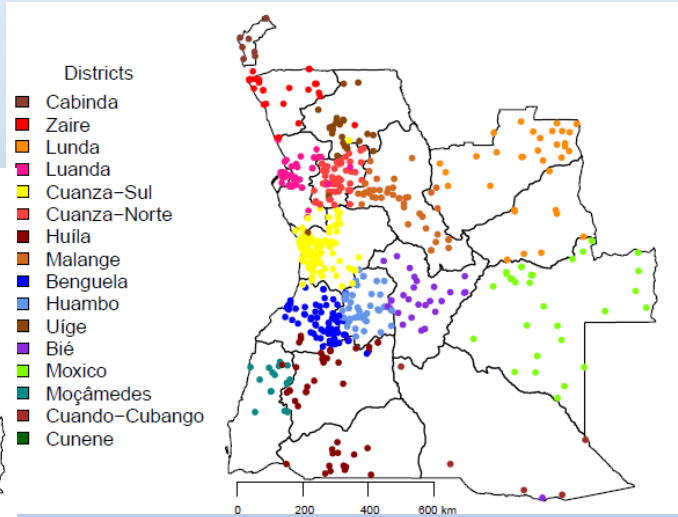
O nosso estudo indica a existência de 379 estações climatológicas

Rede de Bacias Hidrográficas



53 estações de bacias hidrológicas

Rede de Estações Udométricas



676 estações udométricas

Controlo de Qualidade

TESTES DE TOLERÂNCIA		
Variáveis	TESTE 1	TESTE 2
	Limites Standard	Limites Intrínsecos
Temperature do Ar	de - 80 a +60 °C	de -10 a + 45
Precipitação	(Daily) de 0 a 500.0 mm	(Mensal) 850.0 ≥ Prec.Total ≥ Prec. Maxima
Humidade	de 0 a 100 %	de 10 a 100 %
Nebulosidade	de 0 a 10	_
Datas	1 to 31 (dias do mês)	_
Numero de dias	0 a 31	_

- Sistema de Sinalização de Erros

Teste 1

Limites Recomendados pela WMO

Teste 2

Limites focados nas caracteterísticas dos dados

Controlo de Qualidade

TESTE DE CONSISTÊMCIA			
VARIABLE	TIPO	TESTE 3	TESTE 4
TEMPERATURA DO AR	tempMed.9h	tempMed.9h < tempMed.max	tempMed.9h > tempMed.min
	tempMed.7h	tempMed.7h < tempMed.9h	tempMed.7h > tempMed.min
	tempMed.diurna	tempMed.diurna < tempMed.max	tempMed.diurna > tempMed.min
	tempMed.min	tempMed.min < tempMed.9h	tempMed.min > tempExt.min
	tempMed.max	tempMed.max < tempExt.max	tempMed.max > tempMed.9h
	tempExt.min	-	-
	tempExt.max	-	-
PRECIPITAÇÃO	prec.total.mm	-	prec.total.mm l ≥ prec.max.mm
	prec.max.mm	prec.max.mm < prec.total.mm	-

Test 3

Test 4

Encontra valores menores ou maiores que as variáveis comparadas

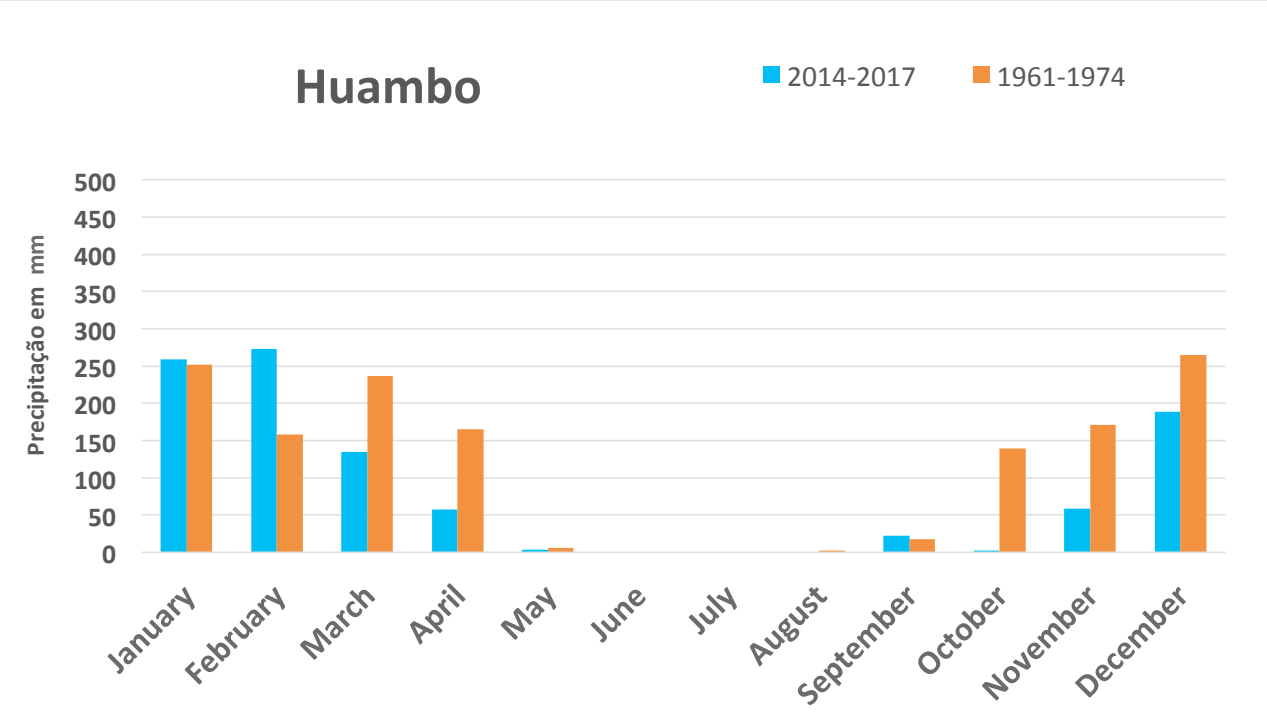
Resultados Preliminares

Há uma redução de cerca de 40% (1400 mm em (1961-1974) para 1000 mm in (2014-2017), no planalto central da região.

Quando comparados os dois períodos encontramos:

2016/17: 750mm

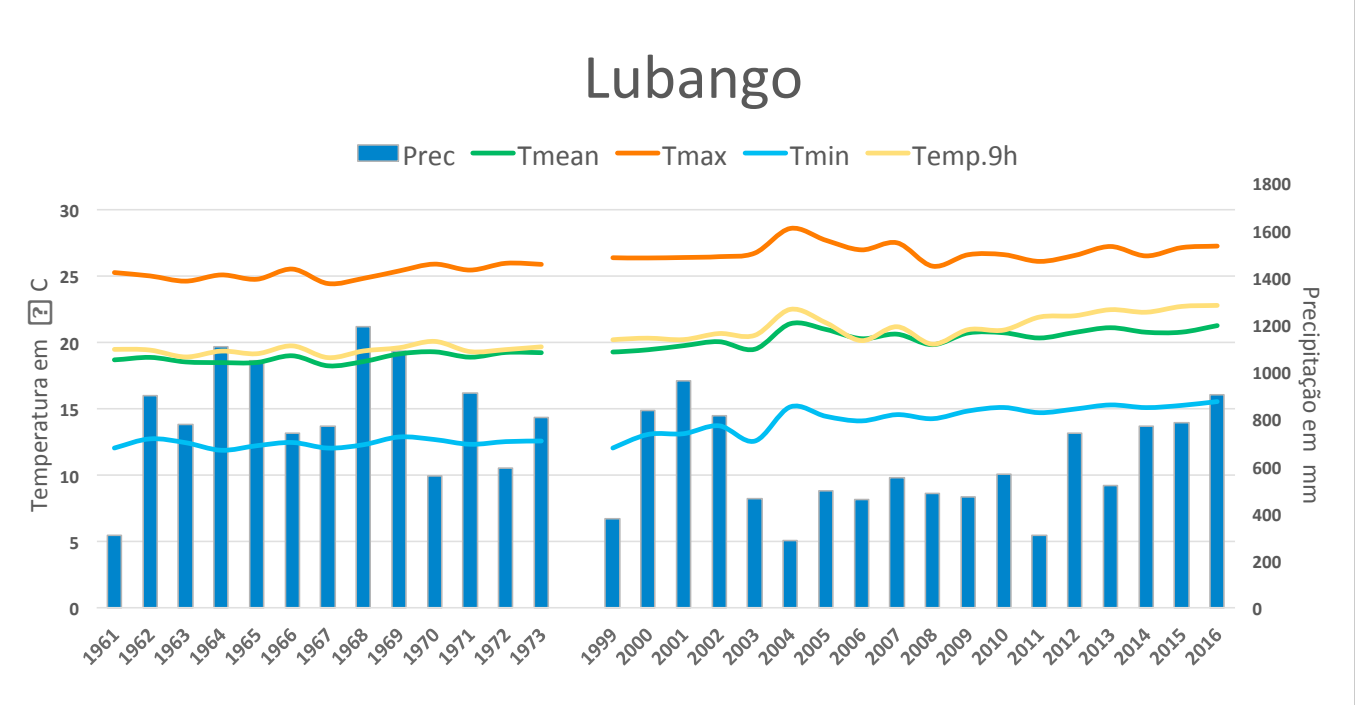
2017/18: 1400mm



Resultados Preliminares

Lubango

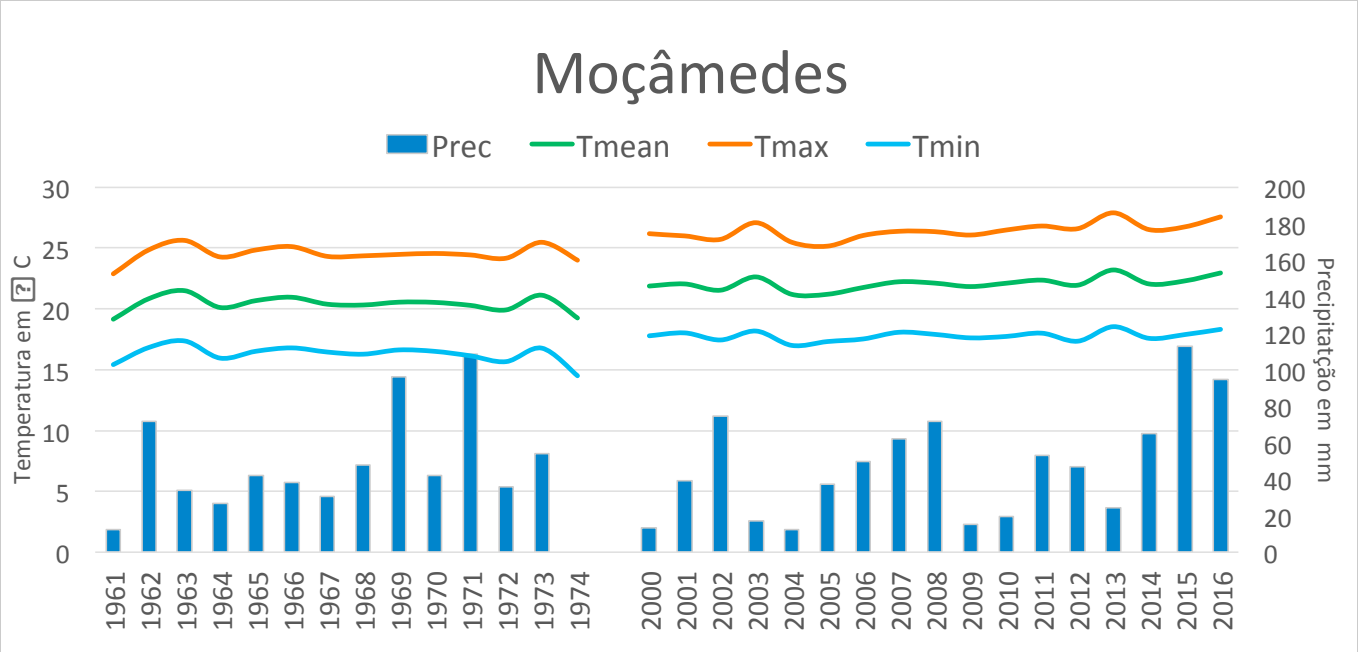
Com as actividades de resgate dos dados dos aeroportos, foi possível compilar mais dados do presente para a estação meteorológica do aeroporto do Lubango e assim compor uma série mais longa.



Resultados Preliminares

Namibe

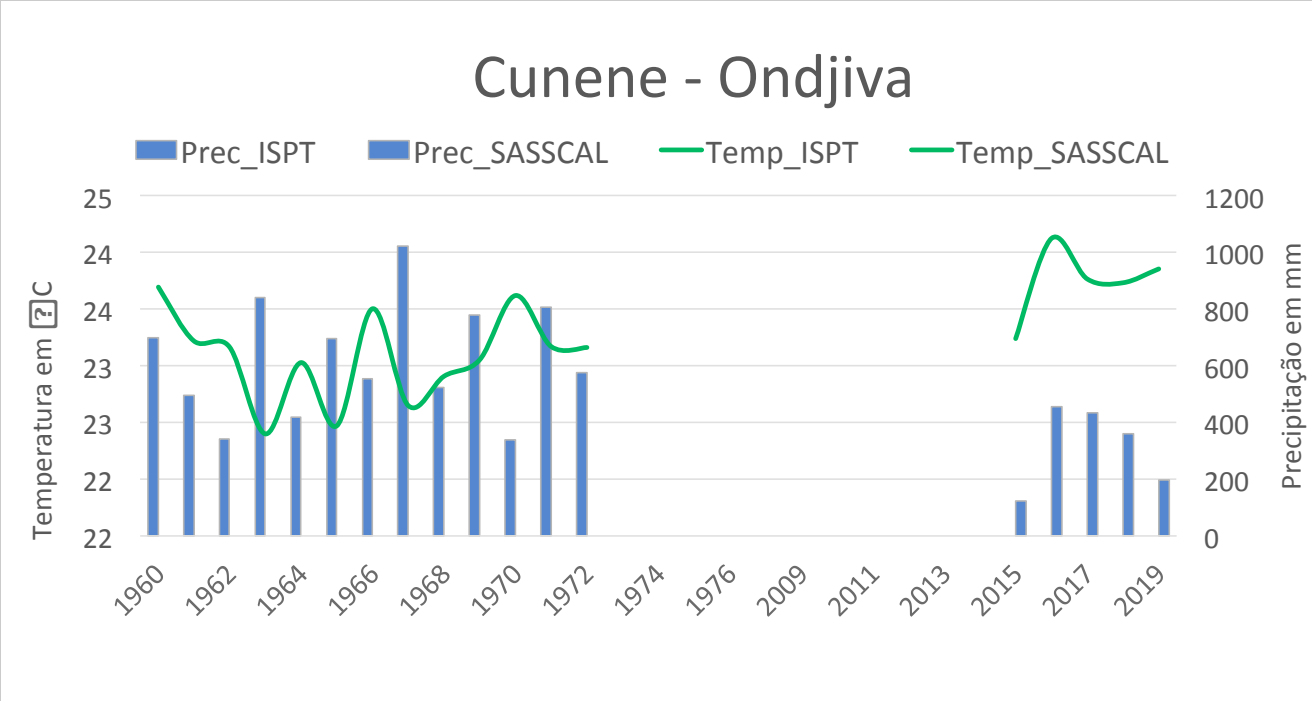
Com as actividades de resgate dos dados dos aeroportos, foi possível compilar mais dados do presente para a estação meteorológica do aeroporto de Moçâmedes e assim compor uma série mais longa.



Resultados Preliminares

Ondjiva

No caso de Ondjiva, a falha de dados é notável, comprometendo os estudos a partir destes resultados. Actividades de resgate de dados da estação de Ondjiva, para os anos de 2009 a 2015, estão em decurso.



Futuras Actividades

Projectos em Vista

- Continuação e Expansão da Rede de Recolha de Dados Ecológicos
  - Expansão da rede meteorológica
  - Melhoramento dos sistemas de recolha de dados
  - Parâmetros mais abrangentes

- Continuação dos Projectos de Resgate de Dados Climatológicos
  - Dados Recolhidos pelo Ministério da Agricultura
  - Dados Recolhidos por Particulares em Fazendas de grande e pequeno porte
  - Dados de Aeroportos entre outros

Futuras Actividades

Projectos relacionados com o Clima

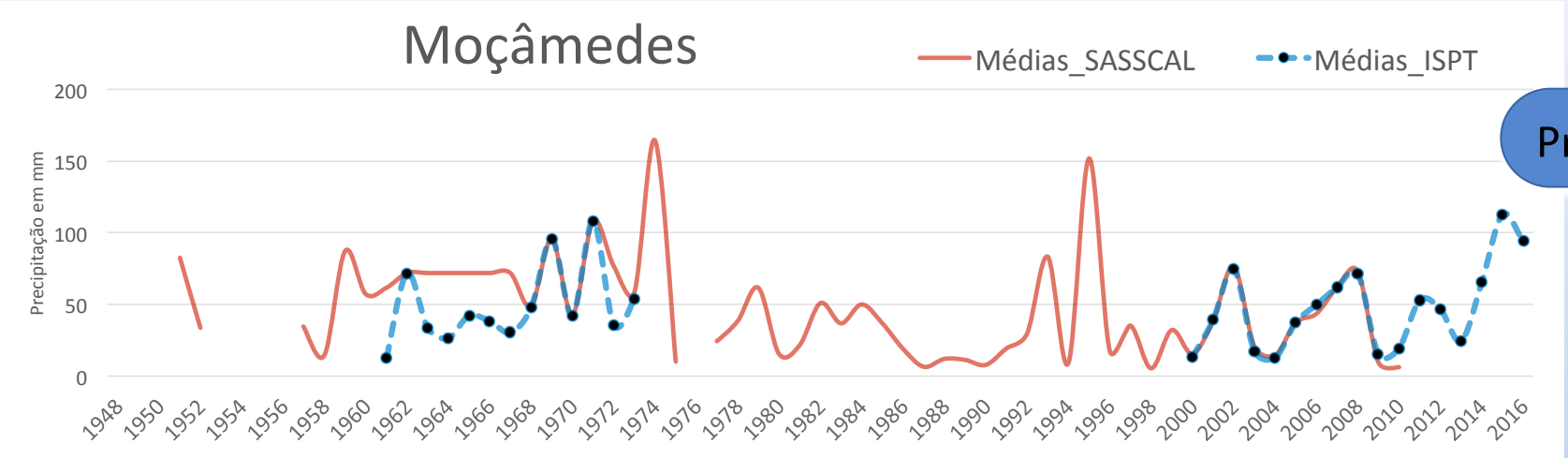
- Juntar maior número de dados de observação em terra
- Estudos complementares com dados de Satélite

- Projecto relacionado com a Corrente Fria de Benguela
  - Instalação de estações de observação das temperaturas do mar no sul do país
  - Colaboração com o INIPM e Academia de Pescas e Ciências do Mar do Namibe

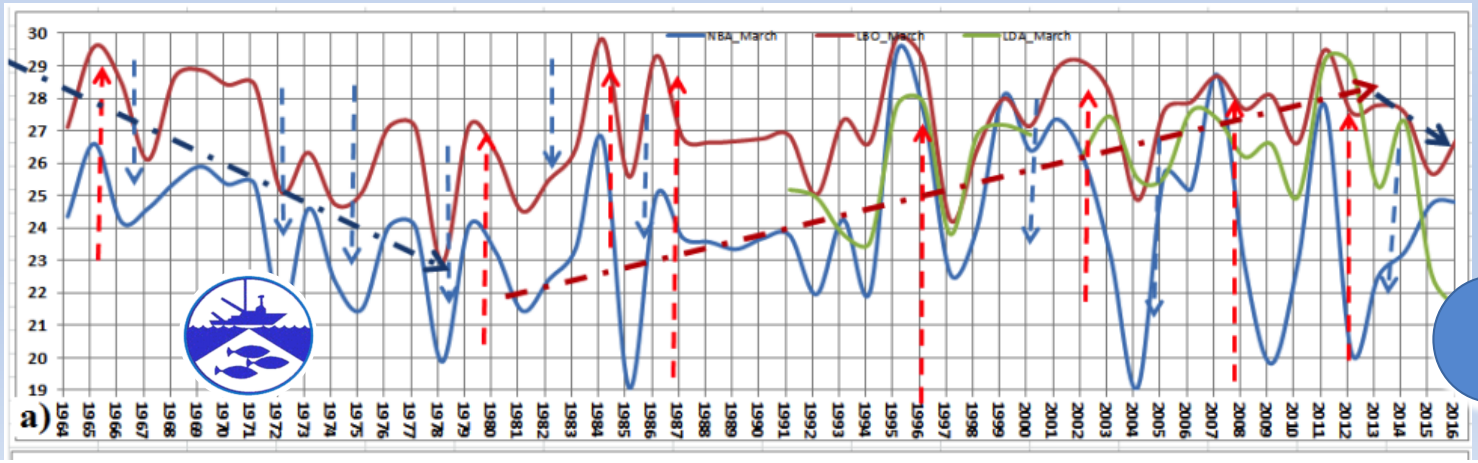
Estudos relacionados com o Clima:

- Catástrofes Naturas
- El Niño de Benguela e suas repercussões em Angola
- Implicações nas Alterações Climáticas

Estudos Complementares



Precipitação



Temperatura do mar

Instituto Superior Politécnico Tundavala

Obrigada

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O Clima no Sudoeste de Angola

https://gazetauigense.com/index.php/sociedade/item/1986-um-milhao-de-angolanos-afetados-pela-seca-no-sul-de-angola