Optical and Scene Networks

Durango, Colorado
September 5, 2007

John V. Molenar
Air Resource Specialists, Inc.

Current Optical Networks: 9/5/2007

		Transmissometers		Nephelometers	
NETWORK		Remote	Urban	Remote	Urban
Arizona	17	-	3	11	3
NPS	12	-	-	11	1
Wyoming	5	2	-	3	-
USFS	3	2	-	1	-
CENRAP	4	-	-	4	-
Colorado	4	-	2	-	2
Nevada (Clark County)	3	-	3	-	-
LADCO	1	-	-	1	-
VISTAS	1	-	-	1	-
Totals	50	4	8	32	6

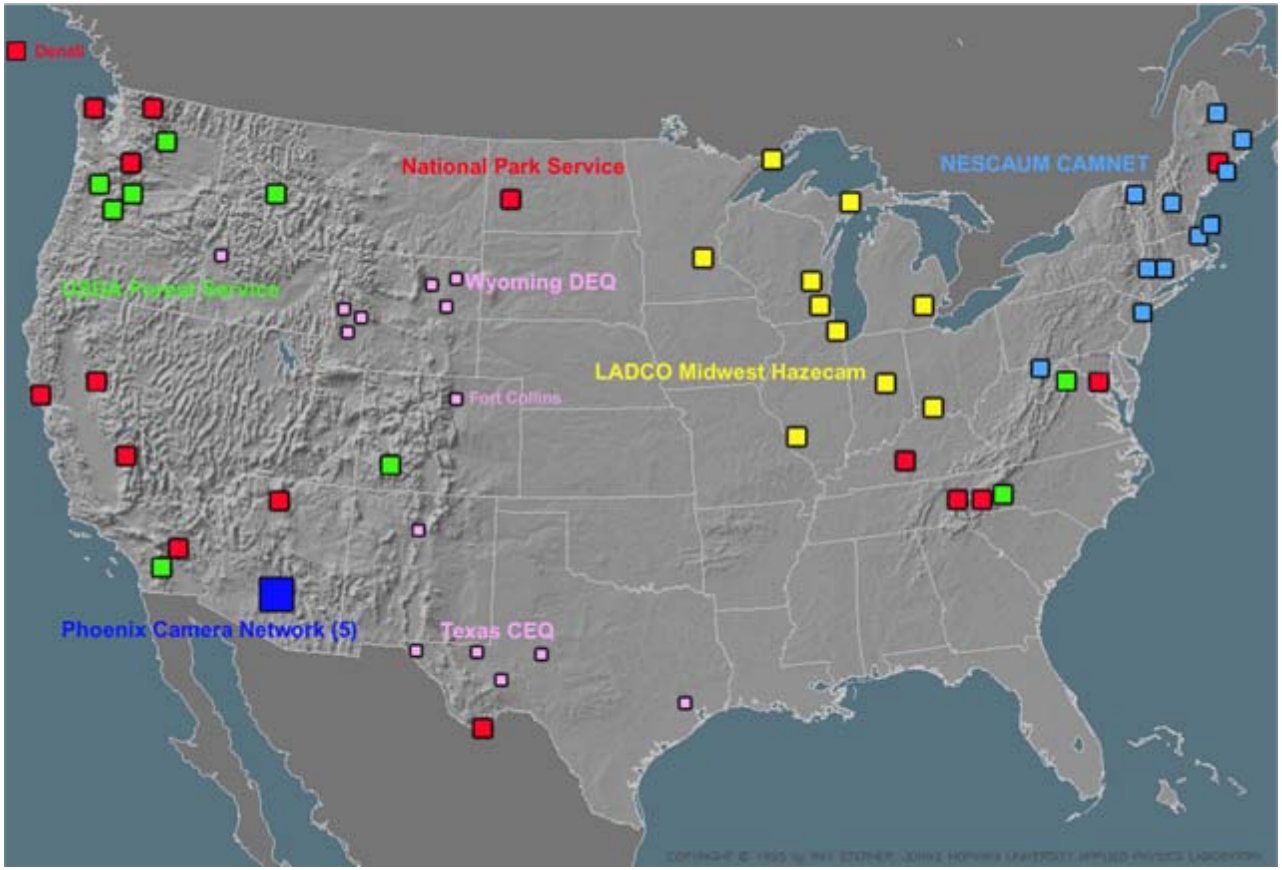
SOPs/TIs

- All Nephelometer, Transmissometer, and Scene SOPs and TIs have been updated and delivered to CIRA.

Optical Data

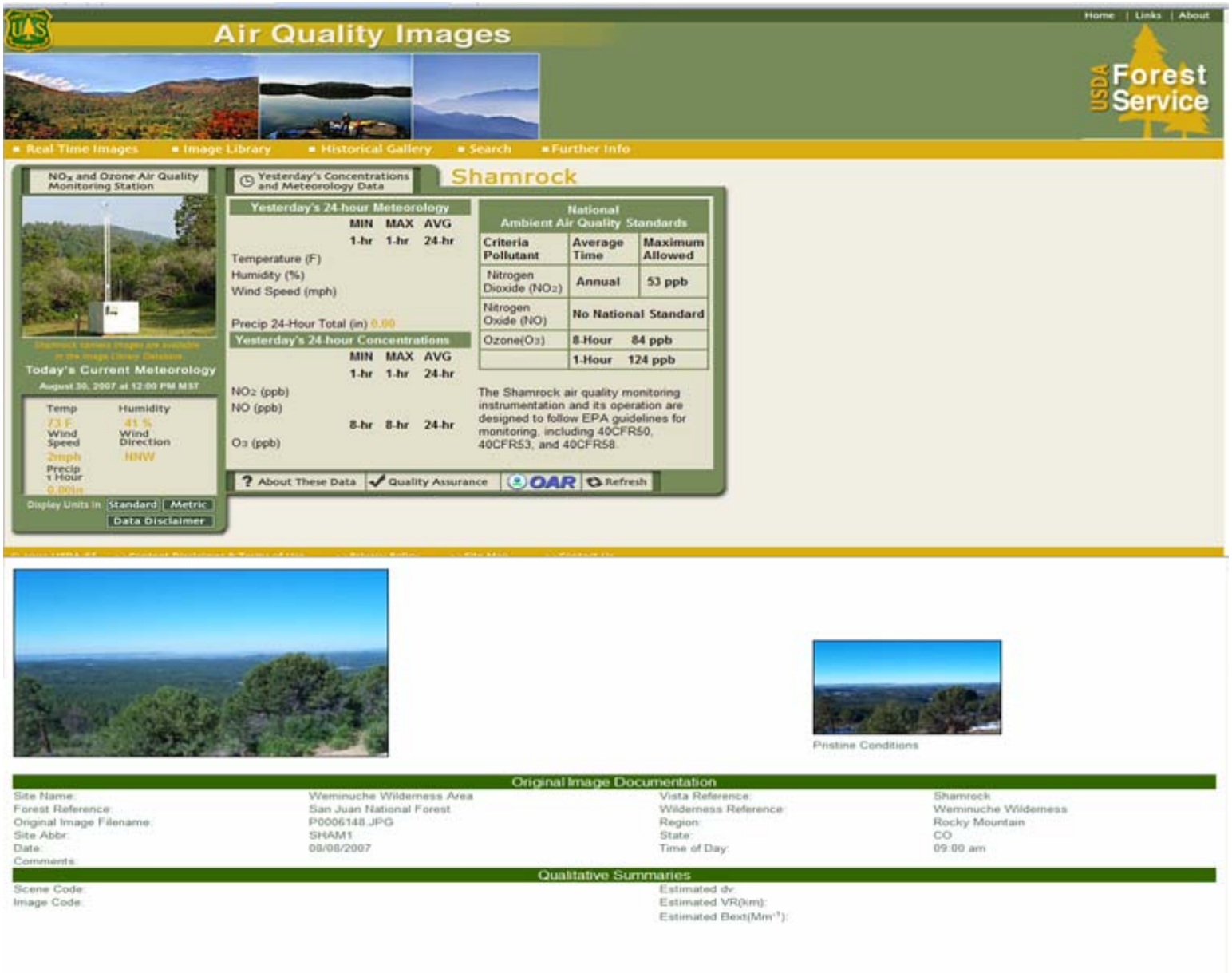
- Transmissometer data from discontinued sites for period 1/1 - 12/31/2006 was delivered to NPS/CIRA on 7/26/07
- Nephelometer data through 12/31/2006 delivered to NPS/CIRA on 6/29/2007
- Nephelometer data through 03/31/2007 to be delivered to NPS/CIRA on 9/30/2007

Digital Camera Networks



Shamrock USFS Monitoring Site

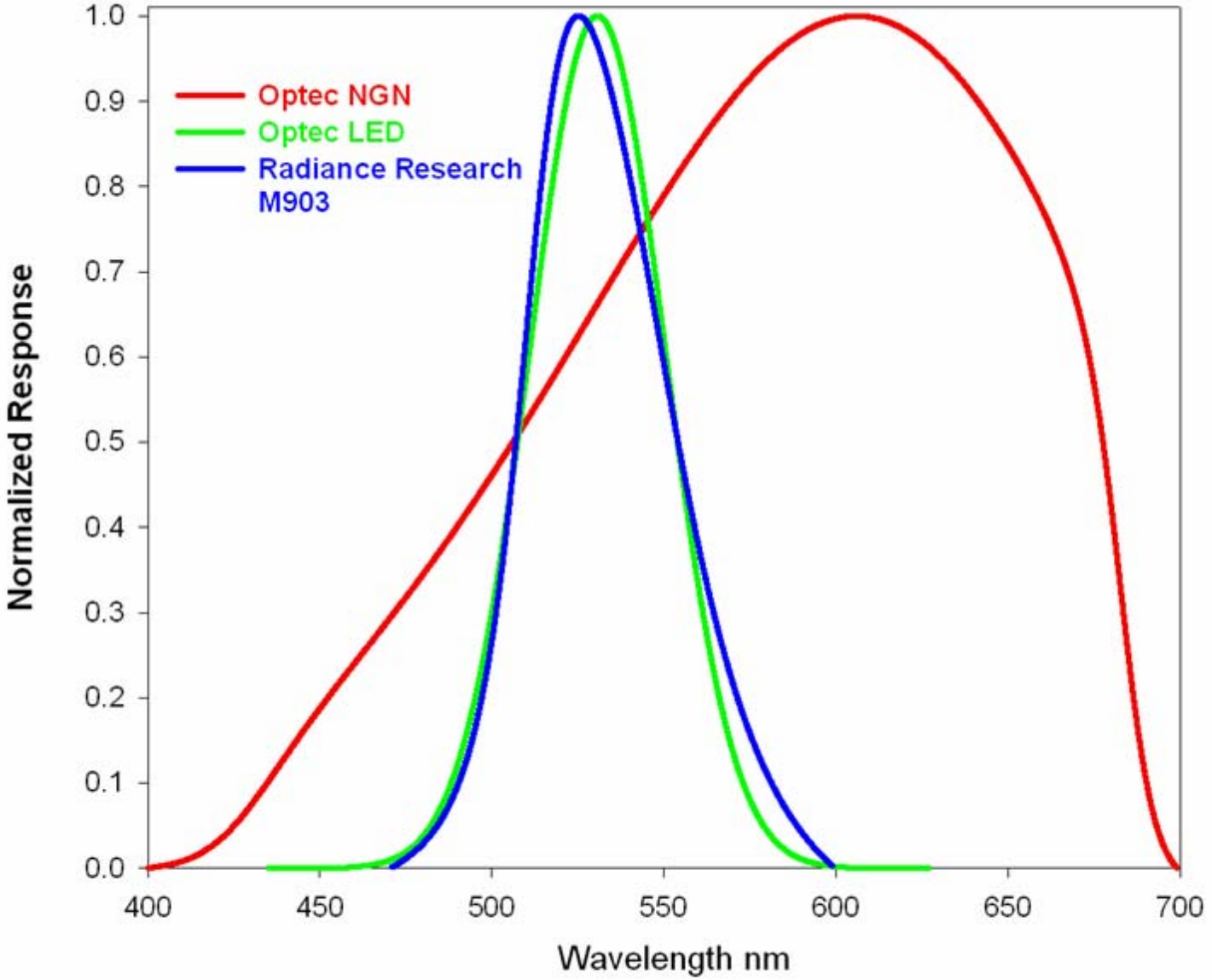
http://www.fsvisimages.com/sham1/sham1.html



Optec NGN LED Nephelometer

LED Nephelometer

- Long ~ 50,000 hr (5 years) lamp life
- Low power
- Minimal heating
- Electronic modulation – i.e. – no mechanical chopping, less failures
- 530nm peak – 40nm band width
- Arizona had ARS retrofit two systems, which were installed May, 2007



Normalized wavelength dependent response of Optec NGN, Optec LED, and Radiance Research M903 integrating nephelometers.

Integrating Nephelometer

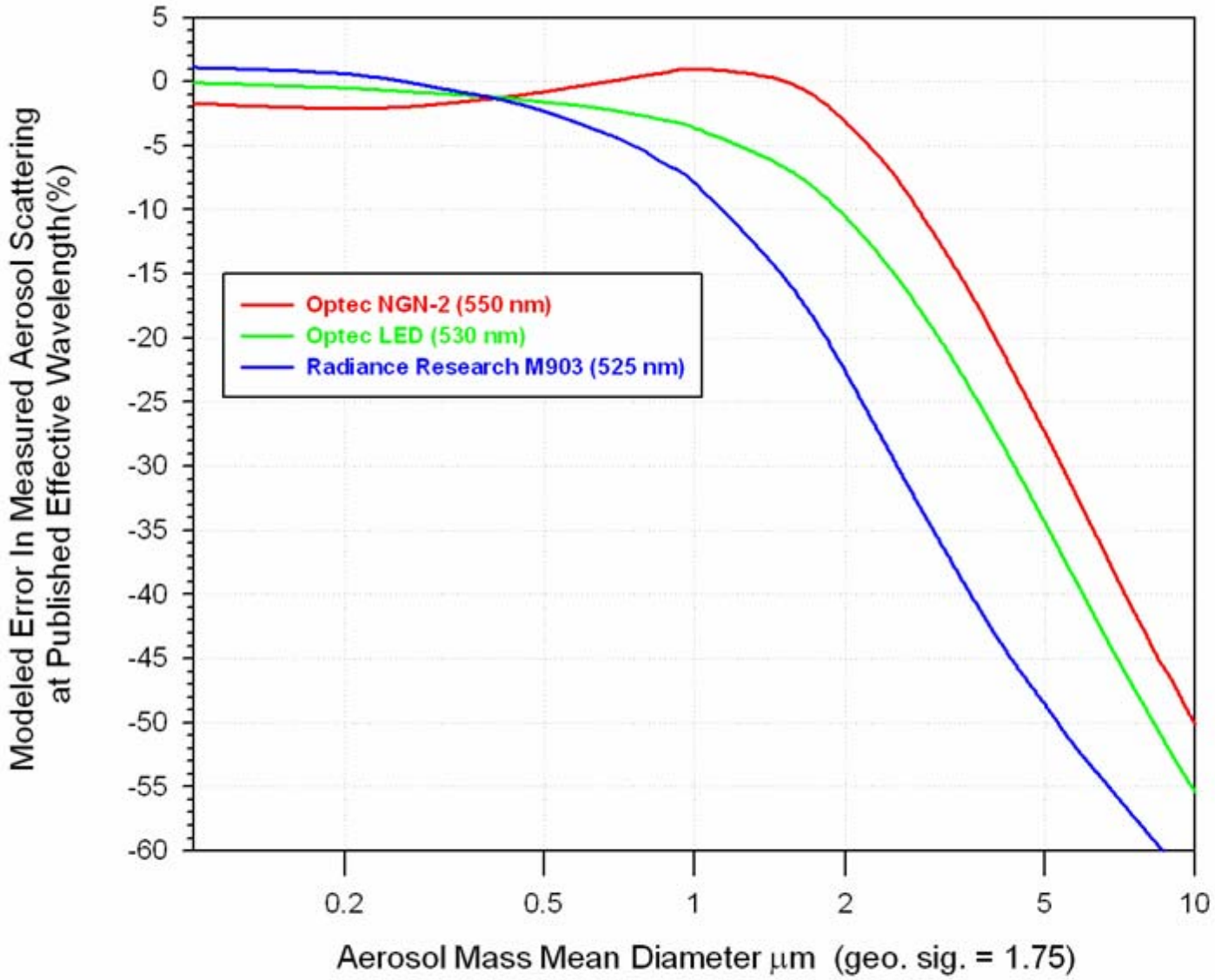
$$2\pi \int_{\lambda} \int_{\varphi} B(\varphi,\lambda) \sin(\varphi)\, d\varphi\, R(\lambda)\, d\lambda$$

1 - $B(\varphi,\lambda)$ is the volume scattering function of the aerosol and gas

2 - $R(\lambda)$ is the spectral response function of the instrument

3 - integration over λ is over all wavelength of light the nephelometer is sensitive to, and

4 - integration over φ is over the detection angle of the instrument.



Estimated error in measured scattering at published effective wavelength for Optec NGN-2, Optec LED and Radiance Research M903 integrating nephelometers as a function of aerosol mass mean diameter; including spectral response and truncation error.

African Dust Event

Caribbean - May, 2007

La Gringa's Blogicito

Gardening and living in La Ceiba, Honduras.

Saturday, May 19, 2007

Toxic African dust cloud alert

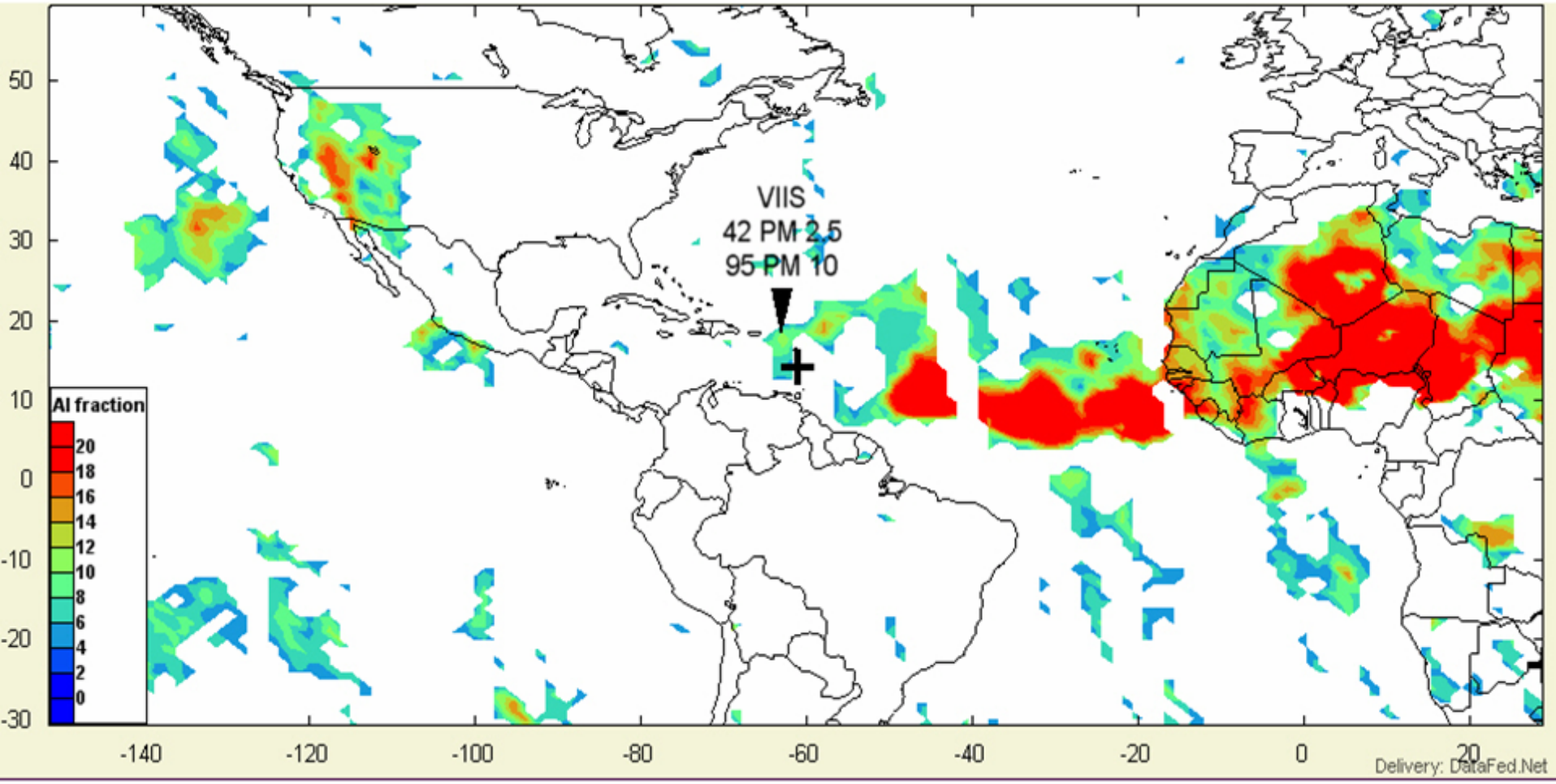
Trajectory of the toxic African dust cloud
Photo: La Prensa, Honduras

A giant cloud of toxic dust from the Sahara, Africa, is headed in a direct line toward Central America, especially the coast of Honduras, Nicaragua, and Belize. COPECO, Honduras' national emergency agency, recommends taking precautionary measures, such as not working outside.

According to **today's La Prensa**, the cloud, moving at 20-30 km. per hour (12-19 miles per hour), currently measures 1,200 by 800 km. (746 by 497 miles).

According to the US Meteorology Service, the cloud was over Venezuela on Friday, and will be over Honduras today and tomorrow. According to Central American experts, the cloud is carrying 2 parts per million of mercury originally from African mines as well as pesticides whose use is prohibited in developed countries but are frequently used in the north of Africa. They also mentioned that it will bring microorganisms which will cause respiratory problems, principally in the Caribbean region. The most impact will be in the coastal zone and it may leave a fine layer of reddish dust.

May 15, 2007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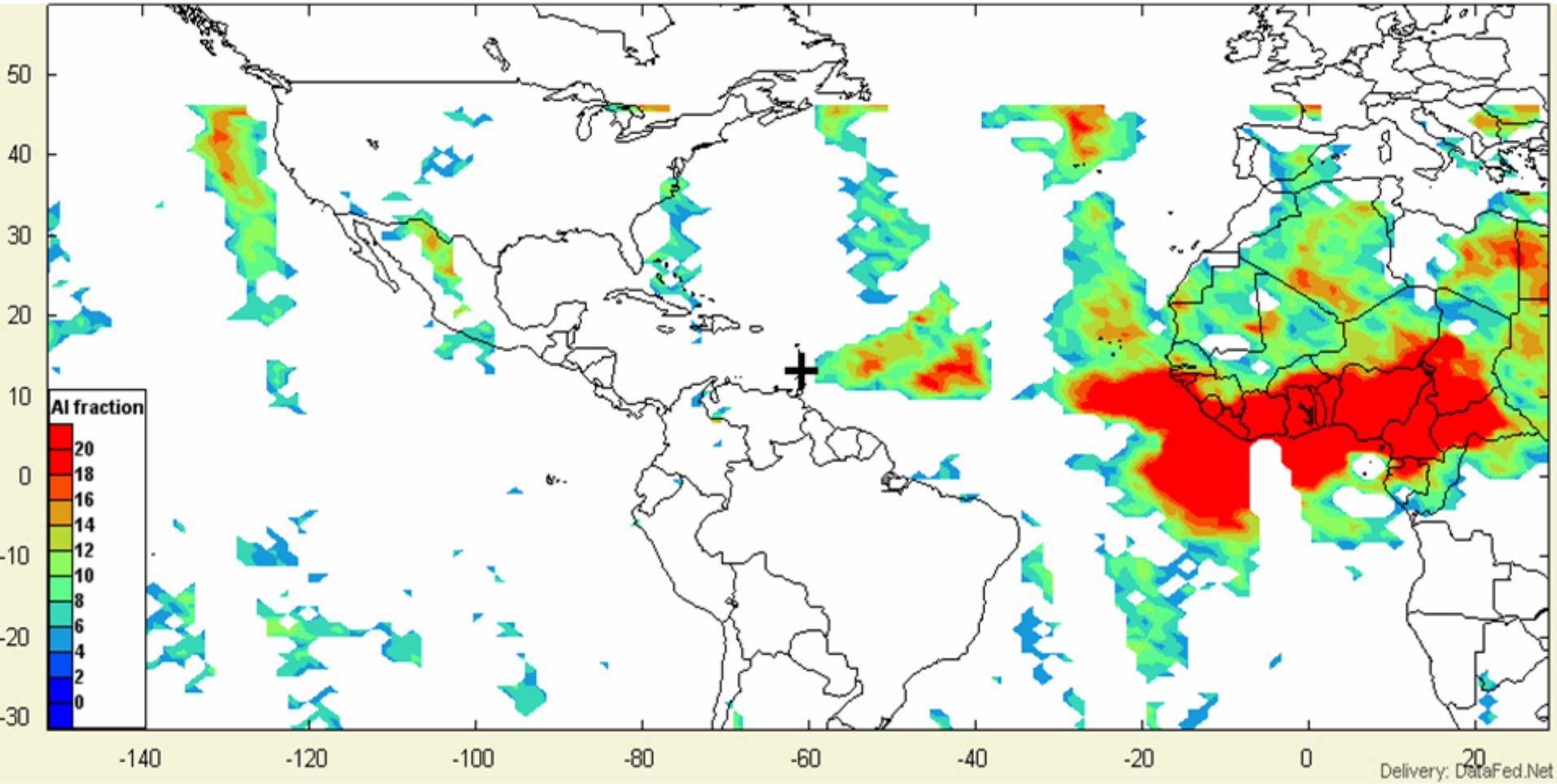
May 16, 2007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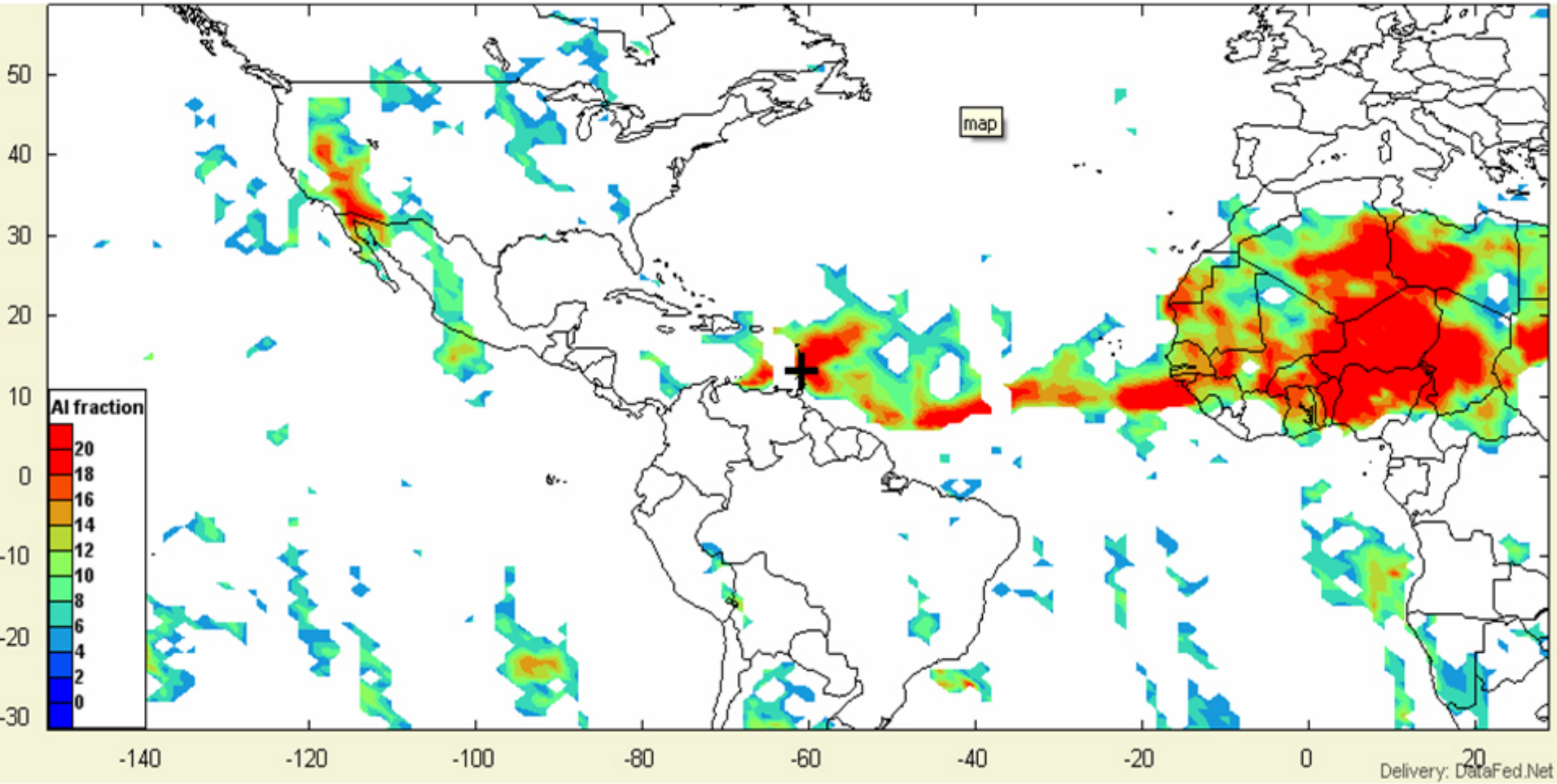
May 17, 2007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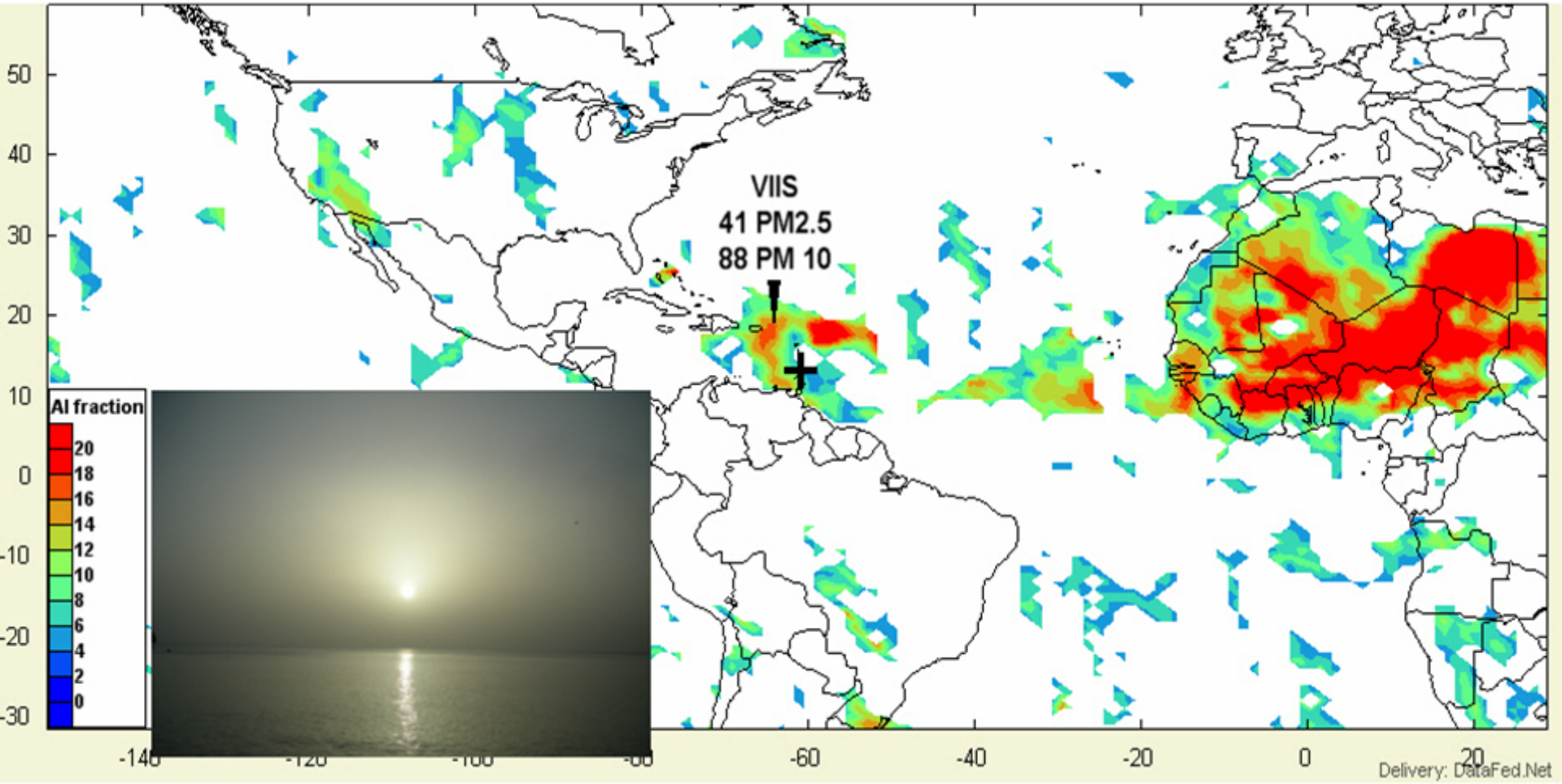
May 18, 2007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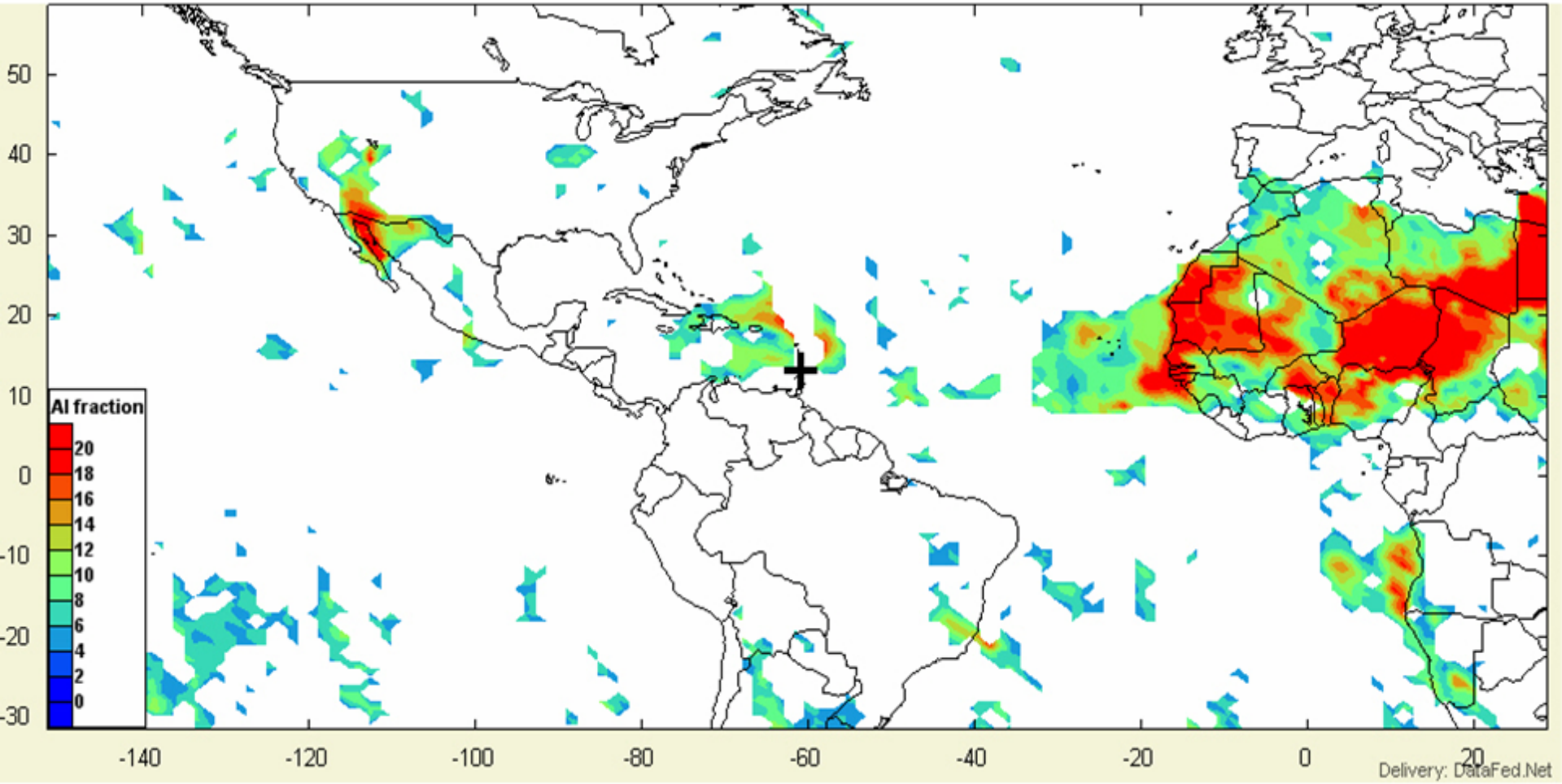
May 19, 2007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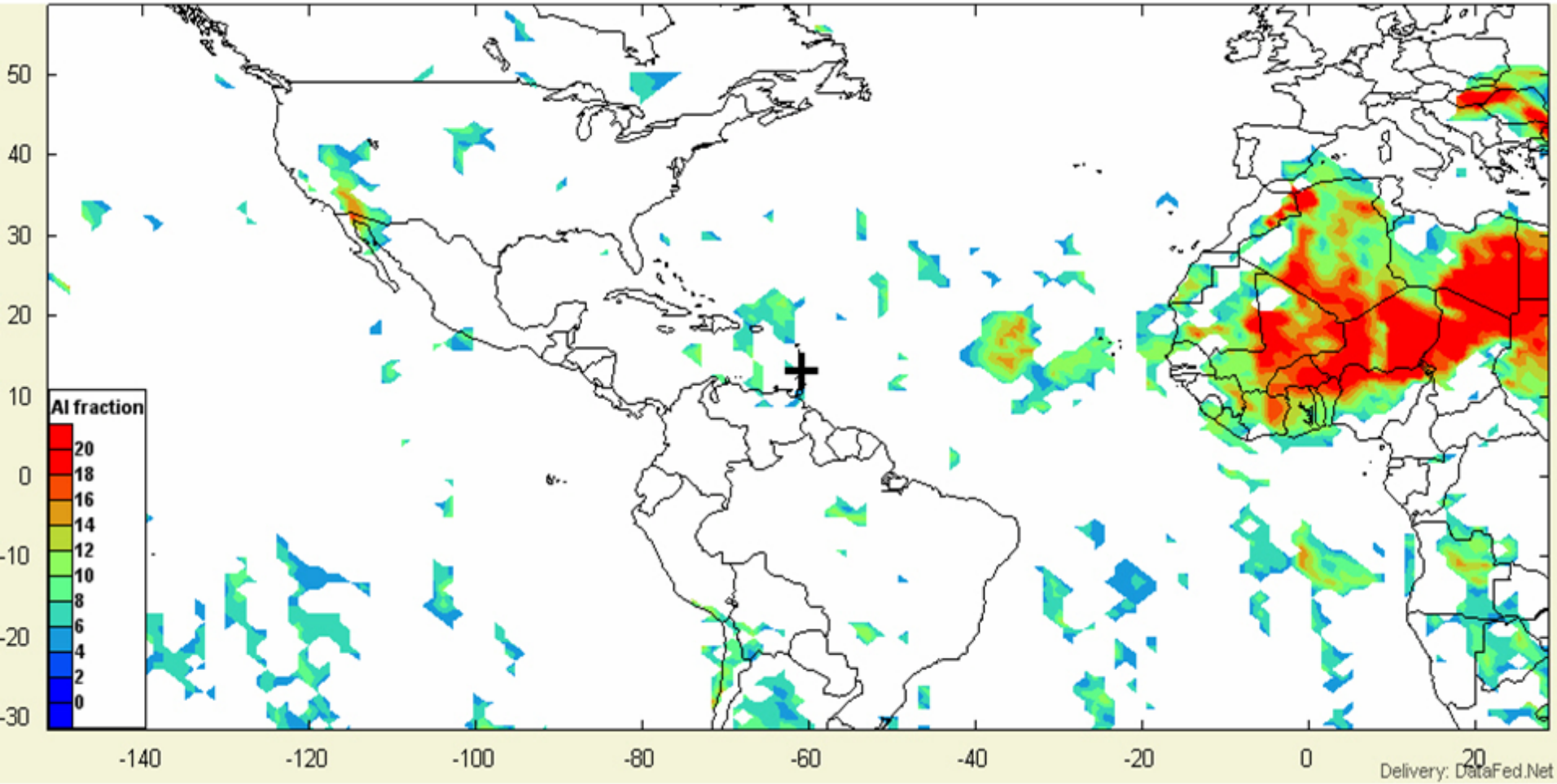
May 20, 2007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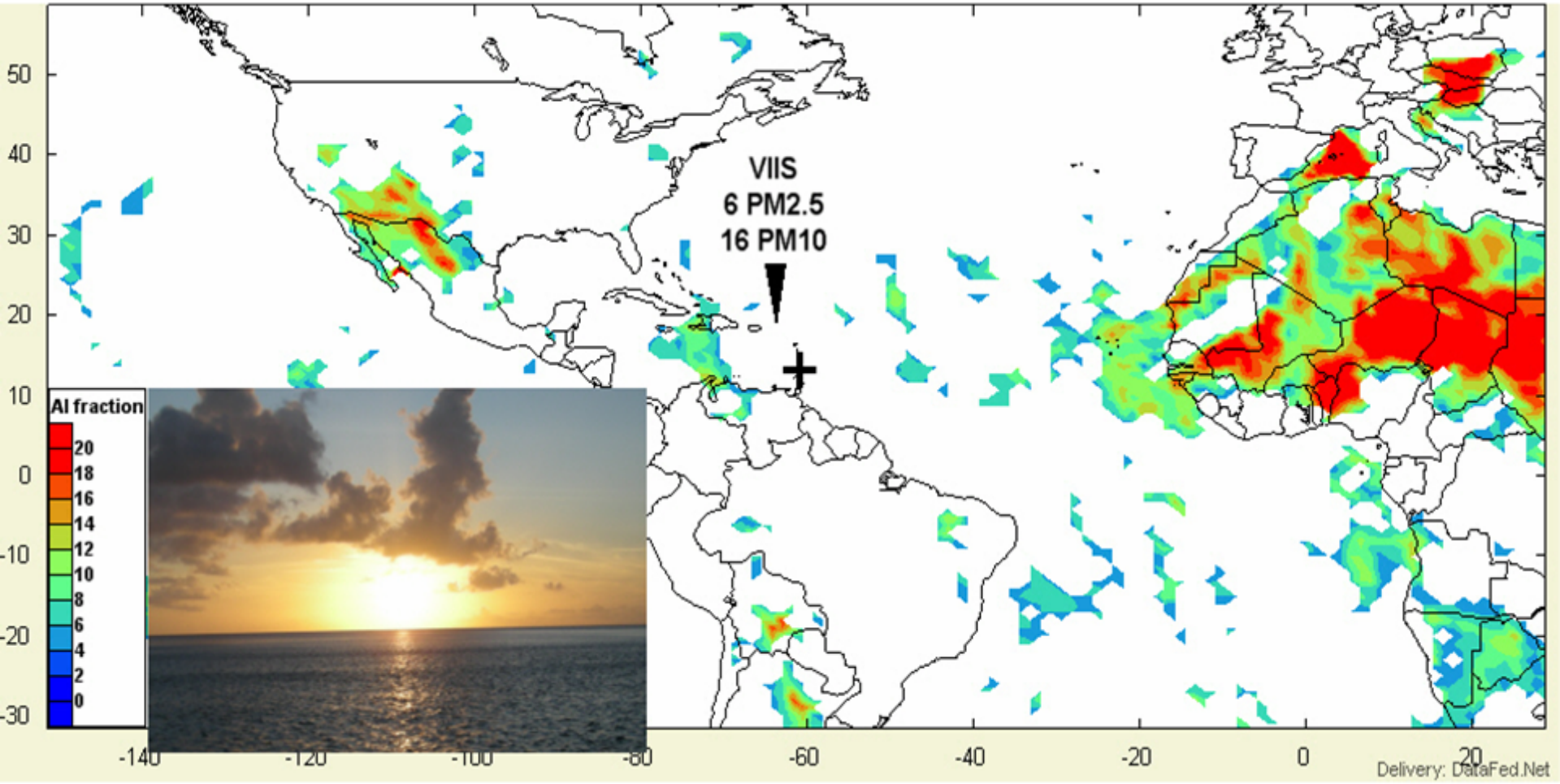
May 21, 2007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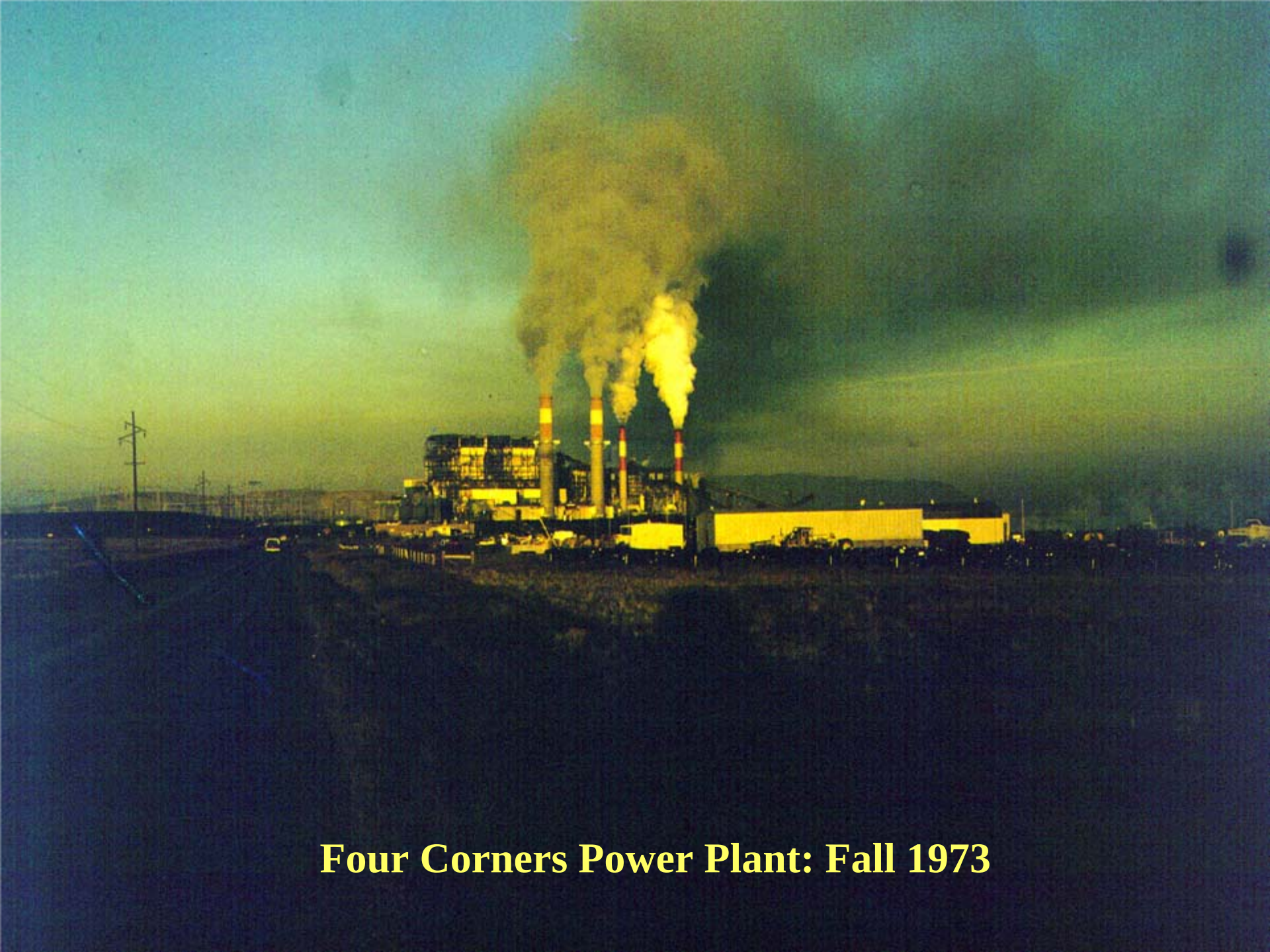
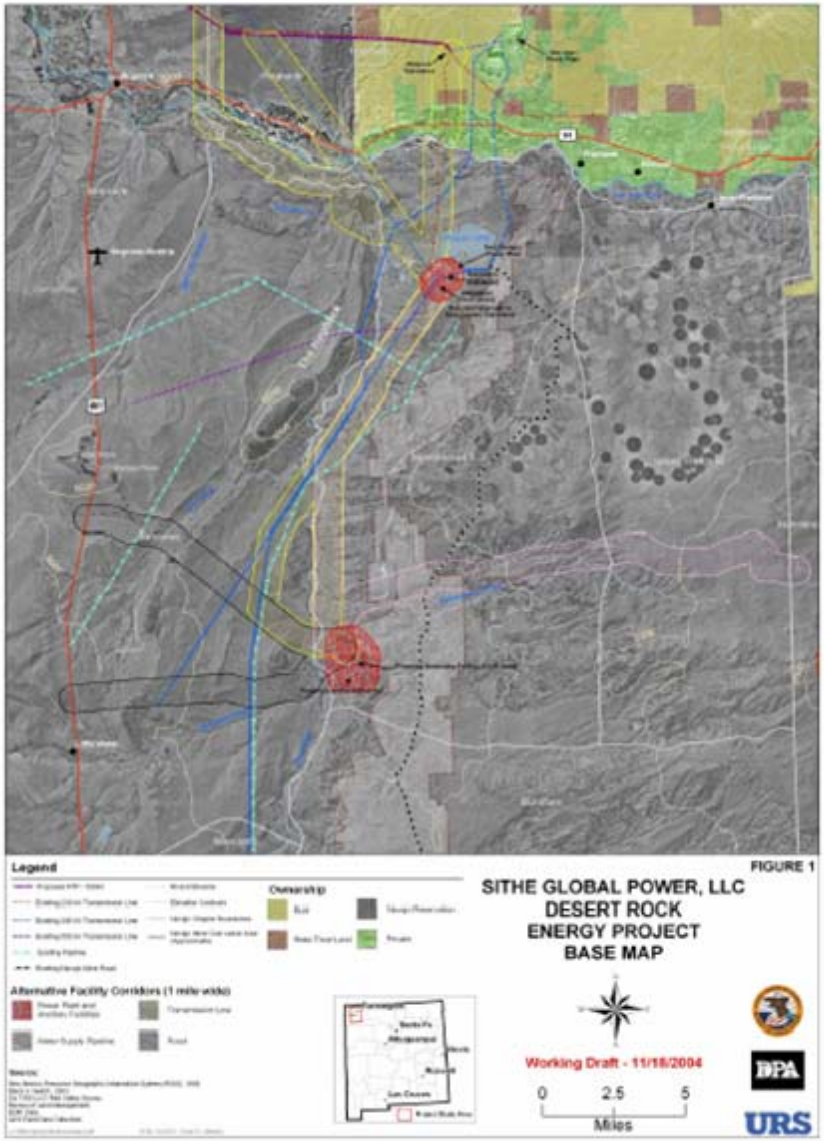


Four Corners Power Plant: Fall 1973

Successes in Four Corners Region during past 34 years

- Kaipairowits NOT built
- Four Corners and San Juan partially controlled
- Controls on AZ power plants
- Mohave shutdown
- Navajo 90+% controlled

Desert Rock – 1,500 MW Coal Fired Power Plant



SITHE Global Power, LLC **FACT SHEET**

Desert Rock Energy Project — December 2004

INTRODUCTION

Sithe Global Power, LLC proposes to construct a hybrid dry cooled coal-fired electric power generating plant south of Farmington in northwestern New Mexico, per the project development agreement entered into with Diné Power Authority (DPA), an enterprise of the Navajo Nation.

Sithe is a privately held, independent power company located in Houston, Texas. DPA was established as an enterprise by the Navajo Nation Council to promote the Navajo Nation's development of energy resources. This project represents a substantial economic development for the Navajo Nation.

The location of project facilities is proposed to be on land held in trust by the Federal government for the Navajo Nation; therefore, the project will enter into a long-term land lease with the Navajo Nation that will require the Bureau of Indian Affairs (BIA) approval. The BIA approval process is considered a Federal action requiring review under and in compliance with the National Environmental Policy Act of 1969 (NEPA). The BIA Navajo Regional Office, serving as the lead Federal agency for compliance with NEPA, has determined that an environmental impact statement (EIS) will be prepared. Under NEPA, actions such as the Desert Rock Energy Project must consider the potential effects on the environment including human, natural, and cultural resources. Questions that typically are considered by agencies during this type of planning process include:

- *Is there a valid purpose and need for the project?*
- *Have a reasonable range of alternatives been considered?*
- *Is the proposed project consistent with applicable existing regulations and plans?*
- *Will the proposed project cause adverse effects on the human and natural environment?*
- *Is mitigation effective in minimizing impact?*
- *Has the public been informed about the proposed project and had an opportunity to express issues or concerns?*

URS Corporation (URS) has been retained to assist BIA in preparing the EIS required under NEPA.

For additional information, please contact Richard Knox, URS Project Manager at richard_knox@urscorp.com or visit the project website at: www.desertrockenergy.com.

LOCATION

The proposed location of the Desert Rock Energy Project is within a 600-acre parcel immediately adjacent to the existing Navajo Mine, which will provide low-sulfur coal for generating the power. The site is approximately 30 miles southwest of Farmington in San Juan County in northwestern New Mexico land within the boundaries of the Navajo Reservation (see Figure 1 on back).

Similar Power Plant

DESCRIPTION OF THE PROJECT

The proposed project is to construct, operate, and maintain a mine-mouth coal fired power plant, capable of producing up to 1,500 megawatts (MW), and associated facilities (see photograph above). The proposed project would interconnect with existing, proposed, and permitted 500kV transmission systems through construction of new transmission lines to either a new substation or the existing Four Corners Substation. Existing utility corridors and roads would be used for the majority of the interconnect system, but some new utility corridors and roads may need to be developed. The primary components of the proposed project include the following:

- *Two 750-MW coal-fired generation units and associated facilities and operations including plant cooling system, fuel supply system, waste management operations, and safety systems such as lighting, fire protection, as well as other systems (see Figures A and B)*
- *Water supply infrastructure*
- *Power transmission interconnection facilities*
- *Transportation access roads*
- *Construction staging areas*

The proposed project would use existing utility corridors and roads for the majority of the interconnect system; however, new utility corridors and roads may be constructed as part of the proposed project. Further, project actions should incorporate appropriate measures to minimize the effects of the project on the quality of the environment.

A Little Perspective

- Desert Rock Power Plant – 1,500 MW (1.5 GW)
- China in 2005 built 66 GW of coal plants (greater than Britain's total generating capacity)
- China in 2006 built 102 GW of coal plants (greater than France's total generating capacity)
- Equivalent to 112 Desert Rock Plants !!!