

Senegal

SE1. Here we see relatively productive Sahelian savannas associated with deep, sandy soils that have evolved from an ancient erg or dune field. They are important grazing lands for Senegal's pastoralists, the Fulbe. **SE2.** We see contrasting anomalies - a dark strip representing a high production savanna on deep, sandy soils, surrounded by bright areas representing highly degraded land. See the "Revane" vignette for details. **SE3.** In the last 10 to 15 years, cultivated land in the "Old Peanut Basin" that had been cultivated for many decades is now being left in long-term fallow, a result of an economic crisis in Senegal's agricultural sector. Land productivity is increasing as the soils recover and tall grasses dominate. The local economy is diversifying into livestock production. **SE4.** This low NDVI anomaly represents the city of Touba, Senegal's fastest growing urban area, now ranked number two after Dakar. A ring of exhausted, unproductive cropland surrounds the city. **SE5.** This large dark area highlights the Doli Ranch, a range-land reserve originally set aside by the French in the 1930s. It is a productive tree savanna that stands in contrast to the surrounding croplands where peanut farming has been the rule since the early 1900s. **SE6.** Even at the small scale of this image, the degradation of soil and vegetation around Sahelian boreholes is apparent. In this case, we see the loss of productivity around the Dendoudi borehole, drilled in the 1950s to pump water to the surface. It represents a year-round watering place for the thousands of cattle that graze on surrounding shrub savannas. **SE7.** We see the relatively productive vegetation cover of the Thies Forest Preserve. It stands out in contrast to the infertile soils of surrounding cropland. **SE8.** Another example of a positive anomaly - this is the Patako Forest Preserve, set aside by the French colonial administration in the 1930s. It harbors a great variety of plant species. See Patako vignette for details. **SE9.** This bright, complex area represents the salt and mud flats of the Saloum River system. The area was covered by mangrove forests through the 1960s, but drought and deforestation has wiped them out, leaving the barren surfaces we see today. **SE10.** Tambacounda, Senegal's regional capital in the southeast, stands out as an area of anomalously low vegetation productivity. It lies in the midst of the Sudanian zone's wooded savannas with tall, perennial grasses.

Mauritania

MR1. Highly degraded land along the international highway from the Senegalese border to Mauritania's capital, Nouakchott, shows clearly as a bright strip. Human and animal traffic have removed the vegetation and reactivated shifting sands. **MR2.** Here we see the seasonally productive wetland vegetation of Lake Rkiz, which has benefitted from somewhat better rainfall in recent years. **MR3.** Again, we see a strip of degraded vegetation and shifting sands along the national highway from Nouakchott to Aleg. The magnitude of this human caused degradation is clear to see, even at this small scale. **MR4 & MR5.** These large, bright surfaces result from the naturally unproductive soils of Mauritania's Brakna and Gorgol regions. The soils are heavy clays, with a considerable amount of gravel at the surface. Vegetation cover is naturally sparse in these areas, though recent drought has thinned what cover does exist. **MR6.** These are the most productive grasslands of Mauritania. They lie north of the line of reliable rain-fed agriculture and have thus been spared the pressure of cultivation. Moor and Fulani pastoralists migrate seasonally through this vast region. **MR7.** Productive grasslands thrive on the deep, sand soil sheets that overlie the gravel plains (reg) of the Gorgol Region of southern Mauritania. **MR8.** Note the great contrast between the seasonal wetlands (dark patches) and the large areas of very thin or non-existent soil cover (large bright areas). Wind and water have scoured the topsoil, exposing bedrock in this area near Nema.

Mali

ML1. The Manantali Reservoir is a dominant feature in southwestern Mali. It was created when a dam on the Senegal River was completed in 1987, altering the river's natural hydrological regime. While hydroelectric installations have only recently begun producing electric power, many negative ecological consequences are being felt. **ML2.** Sandstone plateaus support very productive savanna woodlands, mostly untouched by agriculture, near Yélimané, Mali. **ML3.** The "cotton basin" of Mali is a region dominated by agriculture - cotton as a major cash crop, along with food crops. Most of the natural vegetation has been cleared, and nearly every arable piece of land is used for cultivation. **ML4.** The water from this tributary of the Niger River has been diverted to Mali's great commercial rice production operation under management of the "Office du Niger". Irrigated rice and sugar cane produce the high vegetation index values seen here. **ML5.** Here we see the highly productive flood recessional pastures of the Inland Delta of the Niger River. As flood waters recede following a November peak, hydrophitic grasslands replace standing water, providing green forage to cattle at a time when the surrounding lands are in the midst of the dry season. **ML6.** The wetland vegetation of the Lakes Faguibine (top) and Oro (bottom) produces high NDVI values. These lakes were full of water in the 1960s, but disappeared during the 1970s drought. Surface water, supporting aquatic vegetation, occurs only in the lowest areas. **ML7.** The vast pastoral region called the Gourma shows great variability in vegetative productivity. The bright surfaces represent highly unproductive, thin and gravelly soils, criss-crossed by wetlands along the drainage. **ML8.** In contrast to the unproductive soils, these deep sandy soils are very productive, supporting a shrub savanna that provides livelihood for pastoral peoples and their herds. **ML9.** The greenery of countless wadis (dry drainage channels in deserts) can be seen in the Adrar des Iforas uplands. They lie in stark contrast to their Saharan surroundings. The wadis green up following the few annual rainstorms that trigger an immediate flush of herbaceous vegetation. Desert locusts survive here, waiting for the right conditions that can lead to a population explosion and massive invasions across West Africa.

Burkina Faso

BF1. Local bright patches represent totally unproductive rocky plateaus, and lateritic soils. These areas are naturally unproductive, and vegetation concentrates in the complex drainage system around them. **BF2.** This general region of medium-low NDVI values characterizes the Mossi Plateau, an area that has been farmed for centuries and has the highest rural population in Burkina Faso. Soil fertility is low, but recent efforts to protect and reclaim soil, and protect vegetation is having great success since the 1980s. See Ranawa vignette for more details. **BF3.** Burkina's capital city, Ouagadougou, is seen here as a bright patch. The city has swollen to over a million people. **BF4.** The "Mare aux Hippopotames" or Hippopotamus Pond is a protected area that stands out from the surrounding land that has come under extreme pressure from cultivation. See Mare aux Hippopotames vignette for more details. **BF5.** This dark area of high relative productivity represents part of the Pendjari National Park. The park preserves some of the most extensive tracts of vegetation from the Sudanian ecological zone, as well as a great variety of mammals.

Niger

NG1. The "Park W" is a trans-national park shared by Niger, Burkina Faso, and Benin. Note the extreme contrast between the protected vegetation within the park and the unproductive plateaus and agricultural lands to the north. **NG2.** These broad valleys or "Dallols" represent the most fertile agricultural and pastoral lands of western Niger, owing to their deep, alluvial soils. **NG3.** Productive, green valleys within the Ader Plateau show up as dark ribbons of high NDVI. Despite low rainfall (400 mm per year), vulnerability to drought, and high rural population, this region represents one of the great development success stories of the Sahel. See Ader Plateau vignette for more details. **NG4.** Like the wadis of the Adrar in Mali, we see the seasonal green-up in the intermittent water courses of the Air Mountains of Niger. They sustain wildlife, livestock, and replenish oasis wells in this harsh Saharan climate. **NG5.** Protected forests in southern Niger (and northern Nigeria) like this one - the Forêt Classée de Baba Nrafi - protect the last remaining vestiges of natural Sudano-Sahelian type vegetation. The region is surrounded by wall-to-wall cropland. **NG6.** This seemingly featureless, light-toned region is the breadbasket of Niger. Its deep, sandy soils and adequate but variable rainfall have attracted Hausa farmers to the region for centuries. Extensive rain-fed crops are grown, including peanuts, millet and sorghum. Over time, the soils have become depleted and productivity levels are low. **NG7.** The West African Sahel is often associated with drought, hardship, and desertification. While land degradation is a reality across the region, nowhere is the process of desertification more visible than this area in southeastern Niger. Since the droughts of the 1970s and 1980s, much of the vegetation has been lost, de-stabilizing the sandy soil and re-activating old dunes. The countless bright patches, representing low production anomalies, are a visible manifestation of this process. See Eastern Niger Degradation vignette for more details. **NG8.** The northern part of the Lake Chad extends into Niger. Dark areas represent the flush of aquatic vegetation, feeding off surface water or year-round moist soils. The lake itself has shrunk to a tenth of its original size (white area in Chad).