
Europe's spaceport and Arianespace in French Guiana

Annex 2

1. French Guiana

1.1. Geography [\(see figs. A2.1 and A2.2\)](#)

French Guiana is a French Overseas Department (D.O.M.). It lies on the Atlantic coast of the Northern part of South America. It is an equatorial region covering about 92 000 squares kilometers between latitudes 2° and 6° North at longitude 50° West. It is bounded:

- a) to the North, by the flat and marshy Atlantic coast covered with a recent alluvial layer,
- b) to the West, by the Maroni river, which forms the natural frontier with Surinam,
- c) to the East, by the Oyapock river separating Guiana from Brazil,
- d) to the South, by the frontier with Brazil, which is formed by the watershed of the Amazon basin.

Most of the territory is covered with equatorial forest, only a coastal strip 1 to 30 km wide being habitable.

1.2. Climate

The climate is of the equatorial type, but is fairly moderate for this latitude, with a temperature generally within a 25° - 30°C range, a low daily variation (5 to 10°C per day) and extreme temperatures of 18° and 34°C.

Despite relatively high rainfall (annual mean 3 m), there are two dry seasons: a short one in February/March with northeasterly trade winds, and the main dry season between July and early December, with easterly trade winds during the day.

The relative humidity is very high with a daily mean value varying between 60 % and 95 %

corresponding to 15 to 22 g of water per cubic metre of air.

French Guiana lies outside the hurricane zone, and has light prevailing winds, mainly north-easterly. Despite its geographical situation, the coastal zone has a pleasant climate, breezy and sunny most of the year round.

1.3. Towns and population

The current population of French Guiana is more than 130 000.

The main towns are Cayenne, Kourou and Saint Laurent du Maroni.



Fig. A2.1 – French Guiana and South America

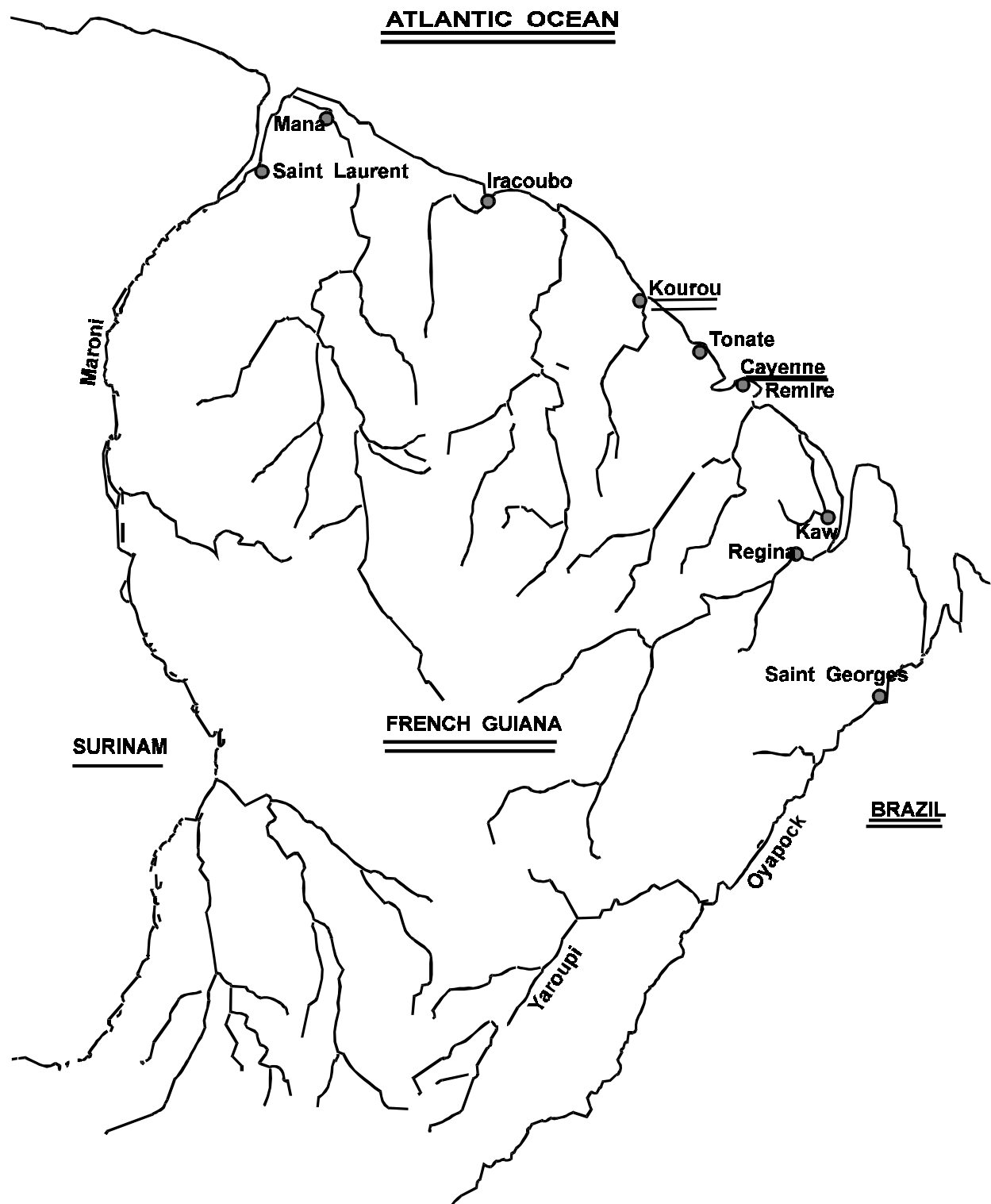


Fig. A2.2 – French Guiana

1.4. Infrastructure and communications

- Sea links

The port of Cayenne is located in the south of the Cayenne peninsula in Degrad des Cannes. The facilities handle large vessels with 6 meters draught. The port is linked to Kourou by road.

The harbour facilities allow the container transfer in Roll-On/Roll-Off (Ro-Ro) or in Load-On/Load-Off (Lo-Lo).

The Pariacabo area is located near Kourou. This facility is dedicated to the transfer of the launcher stages.

- Air links

Rochambeau international airport at Cayenne has a 3200 meters runway on which Jumbo-jets can land. There are flights every day from and to Paris, either direct or via the West Indies. Regular daily flights with North America are available via Guadeloupe or Martinique.

- Road links

The North-Westward national road (RN1) links the main towns of Guyana (Cayenne - Kourou - Sinnamary - Saint-Laurent du Maroni). The South-Eastward national road (RN2) links Cayenne, Rochambeau, Roura, Cacao, Regina.

- Telecom

All towns and facilities in Guiana are linked by telephone telex, telecopy to the international network.

1.5. Health

Yellow fever vaccination is mandatory for any stay in French Guiana.

Malaria is practically absent of the Kourou - Cayenne coastal strip.

Anti-malaria precautions are recommended for persons entering forest areas along river.

Hospital facilities with very complete and up to date equipment are available in Kourou and Cayenne.

1.6. Kourou

The town of Kourou lies on the coast, approximately 65 km north west from Cayenne.

The current population is about 14 000 inhabitants.

The town has:

- church and Oecumenical Centre,
- other facilities such as a swimming pool, a stadium and a sports ground,
- a high-class hotel complex with a total of more than 200 rooms and several kinds of restaurant with seating capacity for more than 600, with international cuisine. Various local and French cuisine restaurants are available downtown.

Kourou town is supplied with electricity main power voltage is 220 - 380 V at 50 Hz.

The town is supplied with drinking water by a pumping station 32 km upstream from the estuary of the Kourou river.

Kourou has all the essential amenities of a modern town such as shops, supermarket, restaurants, and craft trades.

2. The Europe's spaceport

French Guiana's location, close to the Equator, in an area outside the hurricane zone with the possibilities of launches in Northern to Eastern directions over the ocean, and regular air and sea connections were factors which led to the choice of Kourou as the site for the Ariane launch complex.

2.1. General description

The Guiana Space Centre (CSG), now the Europe's spaceport operational since 1968 is managed on behalf of the European Space Agency (ESA) by the Centre National d'Etudes Spatiales (CNES). An agreement between the French government and ESA defines the rights and obligations of each party with regard to ESA's Ariane launch sites and associated facilities.

Within the Europe's spaceport perimeter, the following ESA facilities are namely operated:

- Ariane launch complexes ("Ensembles de Lancement Ariane" - ELA 2 and ELA 3), including facilities required for storage, final

assembly, checkout and launch of Ariane Launch vehicles.

- Liquid nitrogen, liquid oxygen, liquid hydrogen and solid propellant plants.
- Payload preparation complex ("Ensemble de Préparation Charge-Utilité" EPCU), with facilities made available to Users for the preparation of their spacecraft.
- Agreements between ESA, CNES and ARIANESPACE define the conditions for utilisation by ARIANESPACE of ELA2, ELA3 and EPCU.

Its activities are carried out in close cooperation with CNES/CSG as a subcontractor.

It should be noted that management of the Arianespace Kourou Establishment is independent from CNES/CSG range management and report to Arianespace Operation Directorate.

2.2. Role of CNES/CSG

CNES/CSG's role is:

- To provide technical and logistic supports to the Ariane launches such as telecommunication, meteo, plotting, telemetry and tracking to Arianespace and its customers in view to perform the L/V and S/C preparation campaign and the launch.
- To ensure in flight safety and on the range persons and assist safety and protection.

These activities comprise:

- Operation of range and of the down range, stations network.
- Data acquisition and processing from launch vehicles during flight, in real time and post flight.
- General coordination on the range and of the down range stations during ground spacecraft and launcher operations and launch countdown.

3. The Arianespace Establishment in Kourou

The Arianespace Establishment in Kourou was created in January 1982. It is a technical centre in charge of:

- Operations and maintenance of the Ariane launch complexes.
- Support for launch campaigns of Ariane launch vehicles.