

EGU Galileo Meeting

Geoscience for understanding habitability in the solar system and beyond

Furnas, São Miguel, Azores, Portugal,
25–29 September 2017



Participant Handbook

Thanks to our sponsors!



Razão, irmã do Amor e da Justiça,
Mais uma vez escuta a minha prece,
É a voz dum coração que te apetece,
Duma alma livre, só a ti submissa.

Por ti é que a poeira movediça
De astros e sóis e mundos permanece;
E é por ti que a virtude prevalece,
E a flor do heroísmo medra e viça.

Por ti, na arena trágica, as nações
Buscam a liberdade, entre clarões;
E os que olham o futuro e cismam, mudos,

Por ti, podem sofrer e não se abatem,
Mãe de filhos robustos, que combatem
Tendo o teu nome escrito em seus escudos!

Reason, sister of Justice and of Love,
Bend down once more to listen as I pray.
I speak as a free soul, who knows no sway
But thine alone, nor other power above.

Through thee it is those shifting atoms move
That we call suns and worlds, yet never stray;
Virtue by thee has ever had her way,
Through thee the flower of courage ever throve.

Through thee new thoughts survived the pangs of birth
Upon the grim arena's blood-soaked earth;
And they who glimpse the future, heretics,

Through thee can suffer with unquailing sight:
Mother of robust sons, who in the fight
Upon their shields thy powerful name affix!

Antero Quental

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Scientific programme

Sunday, 24 September 2017	
14:00 - 20:00	Registration of participants at Terra Nostra Garden Hotel (front desk)
Monday, 25 September 2017	
08:00 - 09:00	Registration at Terra Nostra Garden Hotel ("Casino" conference area)
Session 1: Opening session	
<i>Chair: Wolf Geppert, Stockholm University, Sweden</i>	
09:00 - 09:15	Welcome address <i>Muriel Gargaud, University of Bordeaux, FR</i>
09:15 - 09:30	Conference logistics <i>Wolf Geppert, Stockholm University (conference co-chair)</i>
09:30 - 10:10	Introduction lecture: General overview talk on planetary habitability and geophysical interactions <i>Véronique Dehant, Royal Observatory of Belgium, BE</i>
10:10 - 10:15	Discussion
10:15 - 10:45	Coffee break
Session 2: Formation of habitable planets	
<i>Chair: Véronique Dehant, Royal Observatory of Belgium, BE</i>	
10:45 - 11:25	Terrestrial planets and Super-Earths: similar bodies? An origin perspective (Review talk) <i>Alessandro Morbidelli, University of Nice, FR</i>
11:25 - 11:30	Discussion
11:30 - 12:00	Formation of habitable planets (Keynote talk) <i>Anders Johansen, Lund University, SE</i>
12:00 - 12:05	Discussion
12:05 - 12:25	Habitable planets in multi-planet systems <i>Ewa Szuszkiewicz, University of Szczecin, PL</i>
12:25 - 12:30	Discussion
12:30 - 12:45	Open Discussion
12:45 - 16:00	Lunch break and facultative guided tour to the hot spring area at Furnas
Session 3: Core and mantle evolution, mantle overturn and their role in the formation of habitable planets and the evolution of their interiors and atmospheres	
<i>Chair: Akos Kereszturi, Konkoly Observatory, HU</i>	
16:00 - 16:40	Coupled evolution of the core, mantle and lithosphere over billions of years: Our current state of understanding (Review talk) <i>Paul Tackley, ETH Zürich, CH</i>
16:40 - 16:45	Discussion
16:45 - 17:15	The link between mantle convection, atmosphere evolution and surface habitability - from the Solar System to exoplanets (Keynote talk) <i>Lena Noack, FU Berlin, DE</i>
17:15 - 17:20	Discussion
17:20 - 17:40	Global Archean geodynamics and onset of plate tectonics evidenced by ¹⁴²Nd <i>Vinciaine Debaille, ULB, BE</i>
17:40 - 17:45	Discussion
17:45	Poster session with coffee, tea, wine & nibbles

Tuesday, 26 September 2017

09:00 - 09:20	On the habitability of a stagnant-lid Earth <i>Barbara Stracke, German Aerospace Centre, DE</i>
09:20 - 09:25	Discussion
09:25 - 09:45	What is the role of the planetary magnetic field in the evolution of the planetary atmosphere? <i>Igor Alexeev, Lomonossov University, RU</i>
09:45 - 09:50	Discussion
09:50 - 10:10	New evidence for recent geologic activity on the surface of the Moon <i>Adomas Valantinas, University of Copenhagen, DK</i>
10:10 - 10:15	Discussion
10:15 - 10:45	Coffee break
10:45 - 11:05	Evolution of Pluto's interior <i>Stephen Coulson, University of Oxford, UK</i>
11:05 - 11:10	Discussion
11:10 - 11:30	The obliquity of icy satellites with internal global oceans <i>Rose-Marie Baland, Royal Observatory of Belgium, BE</i>
11:30 - 11:35	Discussion
11:35 - 11:55	Tidal heating in the Trappist-1 planets <i>Vera Dobos, Konkoly Observatory, HU</i>
11:55 - 12:00	Discussion
12:00 - 12:20	Open discussion
12:20 - 14:00	Lunch
Session 4: Relation between interiors, plate tectonics and atmospheres, and their evolutions <i>Chair: Lena Noack, FU Berlin, DE</i>	
14:00 - 14:30	The magmatic processes making habitable worlds (Keynote talk) <i>Fabrice Gaillard, University of Orléans, FR</i>
14:30 - 14:35	Discussion
14:35 - 14:55	Origin and evolution of the terrestrial nitrogen atmosphere <i>Manuel Scherf, Austrian Academy of Sciences, AT</i>
14:55 - 15:00	Discussion
15:00 - 15:20	Possible methane outgassing scenarios from clathrates on Mars and atmospheric transport modelling <i>Özgür Karatekin, Royal Observatory of Belgium, BE</i>
15:20 - 15:25	Discussion
15:25 - 16:00	Coffee Break
16:00 - 16:40	The evolution of atmospheric composition on the early Earth (Review talk) <i>David Catling, University of Washington, US</i>
16:40 - 16:45	Discussion
18:00	Guided tour through Terra Nostra Garden (Facultative)

Wednesday, 27 September 2017

09:00 - 09:20	Comparative study of circulation regimes of terrestrial planets' atmospheres <i>Pedro Machado, Institute for Space Sciences, PT</i>
09:20 - 09:25	Discussion
09:25 - 09:45	Robust constraints on the climate and ocean pH of the early Earth using a geological carbon cycle model <i>Joshua Krissansen-Totton, University of Washington, US</i>
09:45 - 09:50	Discussion
09:50 - 10:10	Open Discussion

10:10 - 10:45	Coffee Break
Session 5: Interaction of life with the atmosphere, geosphere and interior of planets	
<i>Chair: Emmanuelle Javaux, University of Liège, BE</i>	
10:45 - 11:15	Impact of life on feedbacks cycles in Earth's evolution (Keynote talk) <i>Dennis Höning, German Aerospace Centre, DE</i>
11:15 - 11:20	Discussion
11:20 - 11:40	Microbial isotopic biosignatures and biomineralization to unveil biosphere-hydrosphere-geosphere interactions <i>Nolwenn Callac, Stockholm University, SE</i>
11:40 - 11:45	Discussion
11:45 - 12:00	Open Discussion
12:00 - 13:30	Lunch break
13:30 - 22:30	Conference excursion and dinner
Thursday, September 28, 2017	
Session 6: Role of cometary, meteorite and asteroid impacts on planetary evolution	
<i>Chair: Vinciane Debaille, ULB, BE</i>	
09:00 - 09:40	Seeding Life, Punctuating Evolution – How impact processes affected planetary evolution (Review talk) <i>Kai Winnemann, Museum of Natural History, DE</i>
09:40 - 09:45	Discussion
09:45 - 10:15	Studying the extraterrestrial flux to Earth: what can we learn from the terrestrial impact cratering record? (Keynote talk) <i>Steven Goderis, Vrije Universiteit Brussel, BE</i>
10:15 - 10:20	Discussion
10:20 - 10:40	Early large impacts and the evolution of Venus <i>Cedric Gillmann, Royal Observatory of Belgium, BE</i>
10:40 - 10:45	Discussion
10:45 - 11:00	Open Discussion
11:00 - 11:30	Coffee break
Session 7: Identification of preserved life tracers in the context of the interaction of life with planetary evolution	
<i>Chair: Dirk Schulze-Makuch, TU Berlin, DE</i>	
11:30 - 12:00	Early Life Traces and Evolution, & Implications for Astrobiology (Keynote talk) <i>Emmanuelle Javaux, University of Liège, BE</i>
12:00 - 12:05	Discussion
12:05 - 12:25	Photodegradation of selected organics on Mars <i>Inge Loes ten Kate, Utrecht University, NL</i>
12:25 - 12:30	Discussion
12:30 - 12:50	Habitability of hyperarid Atacama Desert soils as an analog for the search of life on Mars <i>Alessandro Airo, TU Berlin, DE</i>
12:50 - 12:55	Discussion
12:55 - 13:10	Open Discussion
13:15 - 15:00	Lunch break
Session 8: Habitability and planet formation in a broader context	
<i>Chair: Tim van Hoolst, Royal Observatory of Belgium, BE</i>	
15:00 - 15:40	The impact of the host star and of geophysical processes on the habitability of exoplanets (Review talk) <i>Heike Rauer, German Aerospace Centre, DE</i>
15:40 - 15:45	Discussion
15:45 - 16:15	Interpreting Spectra of Exoplanetary Atmospheres: A Review of Atmospheric

	Retrieval (Keynote talk) <i>Kevin Heng, University of Bern, CH</i>
16:15 - 16:20	Discussion
16:20 - 16:45	Coffee break
16:45 - 17:05	Habitability of Many Worlds and the Adaptability of Life on Earth <i>Dirk Schulze-Makuch, TU Berlin, DE</i>
17:05 - 17:10	Discussion
17:10 - 17:30	Apatite geochemistry coming to the rescue for evaluation of Martian abiotic environment composition <i>Ewa Slaby, Polish Academy of Sciences, PL</i>
17:30 - 17:35	Discussion
17:35 - 17:50	Open Discussion
18:00	Guided tour through Terra Nostra Garden
20:15	Conference Banquet
Friday, September 29, 2017	
Session 9: Planetary research: Ethical, philosophical and societal issues <i>Chair: Muriel Gargaud, University of Bordeaux, FR</i>	
09:00 - 09:20	The need for an ethics of planetary sustainability <i>Andreas Losch, University of Bern, CH</i>
09:20 - 09:25	Discussion
09:25 - 09:45	Astrobiology and Society in Europe Today <i>Klára Anna Čapová, University of Durham, UK</i>
09:45 - 09:50	Discussion
09:50 - 10:10	The role of communication in science and astrobiology <i>Arianna Ricchiuti, University of Bari, IT</i>
10:10 - 10:15	Discussion
10:15 - 10:30	Open Discussion
10:30 - 11:00	Coffee break
11:00 - 12:00	Discussion: Future Key Questions in Planet Formation and Habitability, related to geophysics <i>Véronique Dehant, Royal Observatory of Belgium, BE</i> <i>Wolf Geppert, Stockholm University, SE</i>
12:00	Lunch break
13:30 - 19:00	After-conference outing: Walk to Lagoa da Furnas crater lake, visit to Seismic Observation Centre
Saturday, September 30, 2017	
09:00 - 10:30	Discussion on the White Paper “Astrobiology and Society in Europe Today” <i>David Dunér, Lund University, SE</i> <i>Klára Anna Čapová, University of Durham, UK</i> <i>Erik Persson, Lund University, SE</i>
10:30 - 11:00	Coffee break
11:00 - 12:30	Discussion on the White Paper “Astrobiology and Society in Europe Today”
12:30 - 14:00	Lunch
14:00 - 15:30	Core Group Meeting of the COST Action TD1308
15:30 - 16:00	Coffee break
16:00	Core Group meeting (cont.)

General Practical Information

Allergies

The Azores have a very rich vegetation and during the conference many plants will be in bloom (the Macaronesian flora is peculiar). Since it takes place at the end of the dry season, the pollen count should still be low. If you suffer from allergies, please talk to a specialist and inform the course organizers. Also, inform us about any food allergies on the registration sheet.

Banks

There are several banks and savings banks. As an example, there is a branch of Santander Totta at the main road (R. Dr. Frederico Moñiz Pereira 28). Banks usually open Mon - Fri 08:30 - 15:30. Also a cash machine can be found at this bank.

Climate

The climate in the Azores is one of the most balanced in the world. In September, however, hot and damp days are possible. The high-pressure area above the Azores does not always guarantee fine weather; orogenetic clouds and afternoon showers are common. The Atlantic has a cooling influence, so very hot days are rare. In September, the average temperature on São Miguel reaches up to a high of 20°C during the day and dips no lower than 15°C (about 65°F in the evenings. During this month, the average monthly rain is only around 47 mm and there are about 7.5 hours of average daily sunshine. Bring your umbrella and a light raincoat in case of occasional showers that can be quite heavy.

Clothing and equipment

For the excursion good shoes (no flip-flops or high heels) are necessary, walking boots for the after-conference outing are a good idea. Trainers work but are not optimal. Furthermore, the air is usually clear on fine days, and the Sun is VERY intense and sun protection is necessary. Please make sure that you have the following items with you:

- Walking boots covering your ankles if you join the after-conference outing. Trainers with good profile are OK, but not the best choice.
- Sunhat and sunglasses.
- Strong sun screen.
- Umbrella and/or light raincoat (usually the weather is fine in September, but there might be the odd short, but intense, afternoon shower).
- Tablets against motion sickness (if you get it easily). Roads on the Azores can be curvy in places

Criminality

Generally, Furnas as most Azorean villages is a very safe place. On the island of Corvo, the prison cell was once hired out to backpackers due to lack of criminals. Nevertheless, it is not wise to leave your property unattended on the island. Fortunately, annoying time-sharing salespersons and street peddlers, which can be a nuisance on Madeira, are fairly uncommon there. However, pickpockets operate in touristy places, and Furnas is one of them. In Ponta Delgada and Angra it is wise to

be extra careful – there have been problems with petty criminality by second- and third-generation emigrants to Canada and USA who had become criminals and had been deported back to the Azores.

Customs

The Azores are part of the EU (no offshore status). Different rules apply if you travel from inside the EU or from outside it. Information about the max amounts of articles brought from and to the Azores can be found here (<https://portugal.visahq.com/customs/>). Please note that the import of Azorean scrimshaw products to many other countries is illegal.

Dos and don'ts

In general, Azorean people (especially those of the older generation) tend to be a bit more formal than other Europeans. Several special things are worthwhile to remember:

Do's:

- Always treat older people respectfully. Relinquish your seat immediately for older persons in public transport vehicles.
- Accept a more relaxed attitude towards time.
- Expect red tape to take some time.
- Accept hierarchies.
- Carry some change with you for using the bathrooms.
- Be modest in your conversations.
- Tip generously for good service. Wages of personnel are not that high.

Dont's:

- Wear swimwear outside beach or pool areas (especially not in high streets).
- Wear shorts in restaurants.
- Complain about people smoking in your presence (unless you have strong medical reasons to do so).
- Wear light clothes in churches. Also, dirty T-shirts, shorts and flip-flops in city centres will mark you as an unsophisticated tourist.
- Start conversations about family issues. One does not usually discuss those with strangers on the Azores.
- Do not address people with forenames until being asked to do so or someone presents himself with her/his forenames only. Women are addressed with "Senhora" and the surnames, men with "Senhor" and the surname. People with academic titles are addressed with them. Young people, as everywhere, are much more relaxed concerning this issue.
- Yawn, blow your nose or stretch in public (considered rude).
- Be impatient.

Driving on the Azores

Road hogs and Sunday drivers are luckily absent, but driving in the Azores can be more challenging. Roads are curvy, streets in villages often narrow and road rules sometimes not adhered to well. Visitors riding or driving in Portugal must have reached the minimum ages laid down for residents of Portugal even if they are qualified to drive at a lower age in their country of residence. Driving licenses issued in EU and EEA countries are accepted. International driving permits are recognized but not

required. Overall, Portuguese road rules apply. Speed limits outside built-up areas are 120 km/h on dual carriageway motorways, and 90 km/h at ordinary roads. Inside built-up areas limit is 50 km/h.

DO NOT drink alcohol before and during driving. The legal limit of alcohol in the blood is 0.05 % and drink-driving is punished by heavy fines, confiscation of license and/or imprisonment. All passengers must wear seat belts and children under 12 years of age are not allowed to sit in the front. Carry a photo ID with you when driving. If you rent a car, you usually have to have had your license for 1 year. There can be a surcharge for people under the age of 25.

Emergency

112 is the general emergency line throughout the European Union (similar to 911 in the U.S.) The number can be dialed from any phone, and the call is free.

Food and Drink

The cuisine is very special and in some ways different from the mainland Portuguese one. Not, surprisingly, fish is an important ingredient in the diet, beef is widely eaten, also chicken is popular. Generally, food, and especially seafood and dairy products, are of high quality. The Azores are also the only place in Europe where tea and pineapples are grown (the latter ones in conservatories though).

Some typical Azorean are:

- Caldo verde (Cabbage soup)
- Alcatra (beef stew with onions, wine cabbage and ham)
- Caldeir de Peixe (fish stew)
- Linguiça con inhames (pork sausage with yams)
- Lapas (limpets)

In restaurants, often a small plate with cheese, olives and bread (couvert) is served (which has to be paid for). One can (apart from luxury restaurants) decline that. This is not a good idea since they usually are very tasty.

One great feature of the Azores are their tasty cheeses. The most famous ones come from the island of São Jorge, but all islands produce cheese. In Furnas, there is a small cheese factory close to the hotel, producing cheese with hot spring water.

The traditional Vinho de Cheiro is forbidden outside the Azores due to its high methanol content. Some good white and red Azorean wines exist; especially recommendable is the wine from the cellar "Brum" in Biscoitos on the Island of Terceira. There is a local brewery "Melo Abreu" producing a light "Especial" and a dark beer with mixed reputation. It also delivers maracuja and orange lemonades. Imported wines and beers from the Mainland are common.

Internet

The hotel offers free wireless internet connection. Internet connections generally can be slow due to the isolated situation of the Azores.

Lectures

Lectures are held in the "Casino" building opposite the hotel. Just walk through the alley to it

Language

There are strong local dialects at the Azores that can be difficult for Portuguese mainlanders and Brazilians. The command of English varies: Some people are very

fluent (former emigrants to the Americas) and can have even strong Boston or Toronto accents. You will find that it easy to pick up some important basic phrases. Sometimes tourists slip off into Spanish, something that is not always appreciated.

Laundry facilities

There are no coin-operated self-service laundrettes in Furnas. The hotel has a (not cheap) laundry service. A good self-service laundry is, however, found at Ponta Delgada, “wash now” at the Solmar shopping center.

Meals

Breakfasts will be served at your places. Coffee breaks will take place at the Casino close to the lecture hall. Participants are kindly asked to communicate any dietary requirements to the conference organizers.

Medical Services

In case of emergency, call 112 (general emergency). There is a hospital in Ponta Delgada.

European residents who are covered by a social security scheme in their country of residence are entitled to a European Health Insurance Card (EHIC). The card simplifies the procedure when receiving unforeseen medical assistance during their visit to a member state. It should be carried when travelling within the European Economic Area, (i.e. the European Union, Norway, Iceland and Liechtenstein) and Switzerland. The EHIC entitles the holder to the same treatment at the same cost as a national of that country. Presentation of the EHIC guarantees reimbursement of the medical costs on the spot, or soon after returning home. The card is only valid for state provided services and not private hospitals or treatments. Please obtain your EHIC card in good time before the summer school. General information about EHIC can be found here (link to <http://ec.europa.eu/social/main.jsp?catId=509&langId=en>). In case you have to pay, keep a receipt for refund.

Attendees from non-EU countries who are not EU residents are **STRONGLY** advised to get an adequate travel insurance. Otherwise, illnesses and injuries can get very expensive.

Money

Portugal has the Euro since 2002. Also Euro coins from other countries are valid (there is a special set of coins for every country, but is only one kind of bills in the Eurozone). There are two cash machines in Furnas, one at the Santander bank at Rua Dr. Frederico Moniz Pereira and at the Rua P. Botelho (on the left side if you come from the hotel, a bit hidden). Fees for the withdrawal depend on the respective credit card and amount on average, 2%. Credit cards are widely accepted, but it is wise to carry cash with you. In small shops and restaurants still cash is king.

Pharmacies

There is a pharmacy (Farmacia da Misericórdia) on Rua Nova 5 (on the corner of the main road). Opening times Mon - Wed 09:00 - 12:00 and 14:00 - 18:30, Thu - Fri 09:30 - 12:00 and 14:00 - 18:30, Sat 09:30 - 12:00. Please note that Portuguese laws are more strict on prescriptions than e.g. US ones. If you need medication, take it with you together with a doctor's statement. Take the red line at customs if you bring medication with you.

Post office

Post offices "Correios" are generally open during normal shopping hours. There is a post office in Furnas (Avenida M. Rodrigues, opposite the bus terminal). It opens from 09:00 to 17:00 hours on weekdays. The Azores have their own (beautiful) stamps.

Public transport

There is a good public transport in Sao Miguel, but to more remote locations, services operate sporadically. There are usually 2-3 connections per day. Information about timetables and price of tickets is found at the website of São Miguel Transportation (<http://www.smigueltransportes.com/>). You can buy tickets from the driver. Please note that three different companies operate the public bus transport on São Miguel.

Public holidays

There are no public holidays during the conference period. However, local "festas" (celebrated with great enthusiasm).

Sightseeing

The nine islands of the Azores all have their unique character, so it is well worth to spend some time there: Highlights include

- City of Angra do Heroísmo (UNESCO World Heritage Site)
- Museums and gardens at Ponta Delgada
- Hot spring area at Furnas
- Caldera of Sete Cidades
- Furnas do Enxofre cave at Graciosa
- Pico Volcano
- Caprelinhos eruption site on Faial

Tourist information about the Azores can be found at the Official Azores Tourist Information. (link to www.visitazores.com). Please note that you **will not** have time for a lot of sightseeing during the conference. For accompanying persons it is a wise thing to consider renting a car from the airport already, which saves you also the transfer to the hotel.

Shopping

The opening hours are handled individually the Azores - in smaller places according to the mood and availability of the owner. Shops usually open Mon - Fri 09:00 - 12:00 and 14:00- 18:00, Saturday 09:00 - 12:00. Supermarkets often have longer opening times. Street markets only open in the morning. There is a "Meu" supermarket on the main road (Rua Dr. Frederico Moniz Pereira 44) that opens daily from 08:30 to 20:00. A smaller supermarket, Casa Cheia is closer to the hotel (Rua Padre José Tavares, 12) and opens Mon – Sat 09:00 – 18:00.

Nice souvenirs are

- Jams, marmalade and honey (from Quinta dos Acores)
- Sweet wines from Brum in Terceira
- Pineapples from S. Miguel, wine from Pico
- Queijadas de Furnas (small almond cakes)
- Fruit liquors
- Baskets and wood products

- Cheese from S. Jorge, there is also a small cheese factory in Furnas very close to the hotel.
- Tea from Cha Gorreana

There are several shops in Furnas, but also very good souvenir shops can be found at the airport.

Taxis

Taxi cost just over EUR 1,- per km plus basic fee (several Euros). In the night and on weekends they can be more expensive (around 20% surcharge). Although most taxis have meters, it is wise to ask for the price in advance. A 5 % tip is usual. Taxis are available in Furnas. Taxi transfer to Furnas from João Paulo Airport costs around EUR 40. Although taxis are equipped with taximeters, it is wise to ask the driver in advance for the approximate fare to avoid surprises.

Telephone

The country code for Portugal is 351 and the area code for São Miguel Island is 296. To telephone out from the Azores, dial 00 and the country code, so 0032 for Belgium and 001 for the US.

Usually mobile phones from Europe work well on the Azores. People from outside Europe can also bring your own cell phone out to the Azores, assuming your cell phone can work properly out in the Europe. Based on experience, AT&T and T-Mobile phones work out there, Verizon and Sprint not so much. There are two major cell phone companies, Vodafone and TMN, and they have stores located throughout the major islands of the Azores.

There are still pay phones available throughout the major towns and cities on the Azores. They are located near town, city centers and near public transportation stops. Pay phones accept calling cards as well as euros. Calling cards are available at most cafés, corner grocery stores and magazine stands. They are available at a cost of 3, 5, and 10 euros per card. Pay phones also accept coins in 2, 1 euros and 50, 20, 10 cents, they are more expensive than the calling card option.

Time

Azorean daylight saving time (GMT/UTC) will be in force during the meeting. There a two-hour time shift between Germany, France and the Azores and a one-hour time shift between London and the Azores. If it is 2 o'clock in London and 3 o'clock in Frankfurt, it is 1 o'clock in Furnas

Tipping

Tipping is common in the Azores. It is usual to tip around 5% in restaurants for good service. This is in addition to any service charge that may appear on the bill. Tip in cash. In cafés, you do not need to tip but can leave the small change behind. Leave the tip on the table in the tray your bill came in, or give it directly to the waiter. In case of bad service, it is OK to give nothing.

Toilets

The gentlemen's room is marked with "H" or "Homens", while the ladies' room is marked with "S" or "Senhoras". In some places, there is a small fee for toilet usage; it is thus wise to keep some change.

Tourist information

For tourist information, check the site of the Azores Tourist Office Website (<http://www.visitazores.com>) Azores Tourist Office Website. The Furnas Tourist Office is located on the main road, R. Dr. Frederico Moniz Pereira, 9675-055 Furnas, phone: +351 296 584 525, e-mail: pt.f.smg@azores.gov.pt. The tourist information at Ponta Delgada is close to the sea, Av. Infante D. Henrique, 9500 Ponta Delgada, phone: +351 296 308 610 +351 296 308 620, e-mail: info.turismo@azores.gov.pt.

Voltage

The electricity supply in Portugal is 220 volts AC, 50 Hz. European-style 2-pin security plugs are in use.

Weights and measures

Portugal uses the metric system.

! DISCLAIMER !

All the information given above is to the best of our knowledge. However, we cannot accept any liability for inadvertently false or incomplete information on this site.

Where to eat?

General information

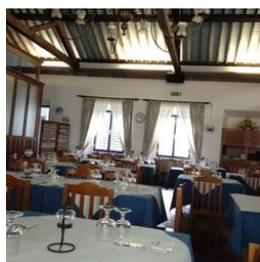
Azorean cuisine benefits from the high quality of ingredients available (local meat, fish, seafood and vegetables). Generally, portions can be large. Usually meals start with cheese, olives and bread as a starter (has to be paid and is normally compulsory), soup, main dish and desserts. Vegetarian and gluten-free options are getting increasingly available, but (unlike New York hipster cafés) Azorean restaurants are not used to extensive dietary requirements. Recommendations and information given below are to the best of our knowledge; we cannot take any responsibility for outdated or wrong facts on our website.

Furnas

There is a varied choice of restaurants, tearooms and bars in Furnas. Since tourism really took off in the 60s in Furnas, some of the places are definitely in the style of this decade. Many places offer “**Cozido das Furnas**” a meat and vegetable stew cooked slowly for long time (up to a day) in hot spring water. **Important: If you want to eat this dish, please order it at least one day in advance.** The following list should be seen as a compilation of recommendations and is, of course, not complete. All places are in walking distance (less than 165 minutes from the conference venue).

Restaurants

	Aguas Quentes Traditional restaurant close to one of the spas (therefore the name meaning “hot waters”). Cozido das Furnas available upon order. Starters EUR 1,50 – 5,50. Main courses EUR 8 – 13,50. Rua das Aguas Quentes 15, Phone: 296584482, e-mail: aguasquentes@hotmail.com
	Banhos Férreos Azorean restaurant in the city center. Diverse meat and fish specialties, including Cozido das Furnas (to be pre-ordered). Some mixed reviews lately. Rua Maria Eugenia (close to main church), Phone: 296584504, e-mail: bargibraz@gmail.com
	Caldeiras e Vulcões Restaurant on top floor, bar on ground floor. Modern furniture. The place also produces the sweet “Queijadas de Inhamé” Open Wed-Mon 12:00 – 15:00 and 18:30 – 21:30. Tuesday closed. Rua das Caldeiras 36. Phone 296584312, Web: http://caldeirasevolcoes.com . Reservation online.

	<p>O Miroma</p> <p>Large restaurant (a bit reminiscent of an old railway station restaurant) in the center of Furnas. Specialized in Cozido das Furnas (to be ordered 1 day in advance) and grilled chicken (Frango no Churrasco). Main courses EUR 7- 14, Snacks EUR 5 – 10. Rua Dr. Frederico Moniz Pereira. Phone: 296 584 442, e-mail miroma.restaurante@sapo.pt</p> <p>Web: www.restaurantemiroma.com</p>
	<p>Terra Nostra Garden Hotel restaurant</p> <p>The restaurant of the hotel with the same name is definitely the most upmarket place to eat in Furnas. Excellent food, specialized in Azorean and international cuisine. Extensive wine list, also by the glass. The art deco furniture and the view to the garden make the place special. Cozido das Furnas available upon order 1 days in advance. Open until 23:00 daily. Try to get a place near the window. Rua Padre Jose Botelho. Main courses EUR 18-28. Phone: 296549060, Reservations best done on front desk</p>
	<p>Tony's</p> <p>Has become a kind of institution in Furnas. Specialized in Cozido das Furnas, which has to be ordered 1 day in advance). Two large restaurants, so capable to serve a large number of guests. Starters EUR 1-10, main courses EUR 9 -16. Open daily until 00:00. Large de Teatro 5, Phone: 296584290, e-mail: tonys@sapo.pt</p> <p>Web: www.restaurantetonyms.com</p>

Snack bars

	<p>A Quinta</p> <p>Bar opening at the evening. Nice seating outside, sometimes live music. Avenida Dr. Manuel Arriaga. Phone 296584724, 917261119, e-mail: maxmborges@gmail.com</p>
	<p>3 Bicas</p> <p>Popular snack bar close to the hotel. Very friendly service. Apart from the usual burger, sandwich and toast menu, the place has a quite extensive (for a snack bar) wine list. Can be a bit crowded at rush hours. Rua Padre Botelho 19 (same road as Terra Nostra). Phone 296 584 222</p>

	Terra Nostra Bar
	The bar at Terra Nostra Hotel also offers snacks (but at a bit higher prices than the other places). However the tranquility on the garden terrace and the nice view might well be worth the extra Euros. Rua Padre Jose Botelho.

Cafes

	Chalet Tia Mercés
	Very cozy coffee shop with nice outside (with nice view) and indoors seating down from the main road close to the hot springs (on the way out into the valley). Very large range of herbal infusions, teas and Azorean sweets. The landlady is actually an extremophile researcher. Usually opens, Mon, Wed, Sun 10:00-18:00, Thursday, Friday and Saturday 10:00-23:00: Tuesdays closed. Rua des Caldeiras, e-mail: azoresessentisls@gmail.com
	Merceria da Largo
	Coffee house and souvenir shop. Many Azorean biscuits and other specialties. Rua des Aguas Quentes 26, Phone 296588250, e-mail: merceriadolargo26@gmail.com
	Summer breeze
	Cafeteria and snack bar in the center of Furnas. Open Thursday-Tuesday 12:00 -22:00, but the kitchen is closed from 17-18:00. Wednesday closed. Rua das Caldeiras 18, corner to Largo de Estrela. Phone: 296588204, e-mail: pedro-espilha@hotmail.com

Ponta Delgada

There are lot of places in the capital of São Miguel, but I would recommend a visit in the Taberna Açor. The place has fantastic (and huge) cheese platters and lots of traditional Azorean dishes not often listed on the menus in other places. Very popular with locals and tourists alike, reservation thus highly recommended to avoid long waiting. Rua dos Mercadores (close to the main church “Igreja Matriz”). Open 11:00-23:00. Phone: 29662984, e-mail: tabernaacor@gmail.com.

What to see?

Azores

The nine islands have all their individual character and culture and each of them offers some special attractions. Highlights include:

- The beach Praia Formosa and the fishing village Anjos (visited by Columbus) at **Santa Maria**
- The Furnas do Enxofre lava caves, the windmills and sleepy villages of **Graciosa**
- The city of Angra do Heroísmo (Unesco World Heritage), the lava caves and the vineyards of the island of **Terceira**
- The recent Capelinhos lava field of the island of **Faial**, the Caldeira and the cosmopolitan atmosphere of the island's capital Horta
- The island of **Pico** with its whaling villages, prized wines and the possibility to climb Portugal's highest mountains
- The coastal plains (Fajas), rugged terrains of **São Jorge**, which is also famous for its cheeses.
- The lush vegetation of the island of **Flores** with plenty of walking possibilities
- The island of **Corvo** with its caldera
- And last, but not least the many treasures to be explored at the island of **São Miguel**

Further information can be obtained at the website of the Official Tourist Information of the Azores (<http://www.visitazores.com>).

São Miguel

The largest island of the archipelago offers a cornucopia of attractions and activities. Recommended destinations for visits include:

- The crater of Sete Cidades with its blue and green lake and the famous view "Vista do Rei"
- The city of Ribeira Grande with its museums (Emigrant museum, Casa de Arcaño)
- The crater lake Lagoa de Fogo
- The northern coast with the tea plantations at Gorreana
- The east coast of the island
- The island capital Ponta Delgada

Although some of these sights will be visited during our excursions, it is wise to plan in some spare time for sightseeing before and after the conference.

Some time to burn in Ponta Delgada

The airport is very close to the city center (2km), so if you can spend some time in the city it can be accomplished quite easy. Top attractions include

- The lava cave "Grotta de Carvão" (not to be confuse with the Algar do Carvão on Terceira). It is situated somewhat outside the city on the circular road. With

a rented car, it is easy to stop by, if you plan a visit; from the airport it is wise to take a taxi and ask the driver to fetch you again after your visit. Guided tours usually 10:30, 11:30, 14.30, 15:30 and 16:30. Not as impressive as the caves on Terceira, but worth a visit. Information can be found here (Website: www.grutadecarvao.com).

- The pineapple greenhouses. They are situated to the east of the city. One of them (Quinta das Três Cruzes) can be reached easily by the Minibus line B. Open 09:00 – 19:30.
- The Museum Carlos Machado (consists of two parts, the Sacred Arts Centre in the Church Todos os Santos and the anta Barbara Arts Centre).
- The cathedral (Igreja Matriz) with its blue tiles (azulejos)
- The Synagogue Force of the Heavens, Rua do Brum 16, open Mon – Fri 10:00 – 16:30.
- Really worthwhile is a visit to one of the gardens. The three main ones are close to each other, so they can be visited effortlessly on one afternoon:
 - Jardim Jose do Canto: Botanic Garden with a lot of native and exotic plants. Café and (not recommendable) hotel inside. Entry EUR 4,-. Open 09:00 – 19:00
 - Sant' Ana Garden: Located at the Presidential Garden Open Mon – Fri 09:30 – 12:00 and 2:00 – 16:30. Entry EUR 2,-. **Important: Piece of Identity requested.**
 - Antonio Borges Garden. Interesting garden at different altitude levels. Open 09:00 – 20:00. Free Entry.

		
Sete Cidades crater	Pineapple plantation	North Coast of São Miguel
		
Gruta do Carvão	Presidential Garden	Main church Ponta Delgada

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Social Programme

Although the schedule of the meeting is very tight, there is an ample social programme available for our guests. We will organise a conference excursion (Wednesday 27th afternoon), an after-conference outing (Friday 29th afternoon, for those who stay), and a conference banquet (Thursday 28th evening). During the lunch breaks, guided tours to the Furnas hot spring areas and the Terra Nostra Garden are available. All of these activities are facultative and subject to surcharges. The availability and the programme of the social events might be subject to alterations, especially due to the changeable Azorean weather.

Conference Excursion

On Wednesday 27th September in the afternoon, we offer a half-day excursion including a dinner to our guests. We will start from Furnas to Cha Gorreana (www.gorreana.pt) (Europe's only tea plantation), where we will have a guided tour and the possibility to sample some of the products of the factory. Continuing along the North Coast, we will make a visit to a geothermal power station. We will then make our way to a nice garden in a valley with some hot springs and pools. Our way will further lead us to the picturesque Lagoa de Fogo with some photo stops. We will then make our way past the Lagoa da Furnas (photo stop). Passing by the hotel (where we leave the people not joining the dinner and pick up those joining for the dinner only) we further make our way to Ribeira Quente (site of extremophiles), then to the Restaurant Garajau, where we will have a dinner with local specialities. We will return to Furnas at 22:30. Good shoes should be worn at the excursion. The price for the excursion including dinner is EUR 50,-. If you want to book only the excursion it is EUR 20,- the dinner only is EUR 30,-.

		
Cha Gorreana tea factory	Tea plantation	North Coast of São Miguel
		
Caldeira Velha	Lagoa do Fogo crater lake	Ponta de Garajau

After-conference outing

On Friday 29th September in the afternoon, we invite you to join us for an after-conference outing to Lake Furnas. We will walk up from Hotel Terra Nostra through the outskirts of Furnas and have the possibility to take a walk up to a viewpoint above the lake if weather and trail conditions are permitting. Our trail will pass a Native Flora Replantation project. Then we will visit the hot spring area close to the lake (where the famous “Cozido dos Caldeiras” is cooked) and continue along the lakeside to the Seismic Monitoring Station, where we will stop for a visit. We will then have a short walk to the southern end of the lake from where we will have a shuttle to the Hotel Terra Nostra. Small contribution to the costs of the trip (max EUR 5) can be charged.



Conference dinner

On Thursday 29th September, the conference dinner will be held at Hotel Terra Nostra Garden Hotel. The dinner will have 3 courses. The price for the dinner is EUR 50. One glass of wine per course and mineral water and soft drinks are included in the price.

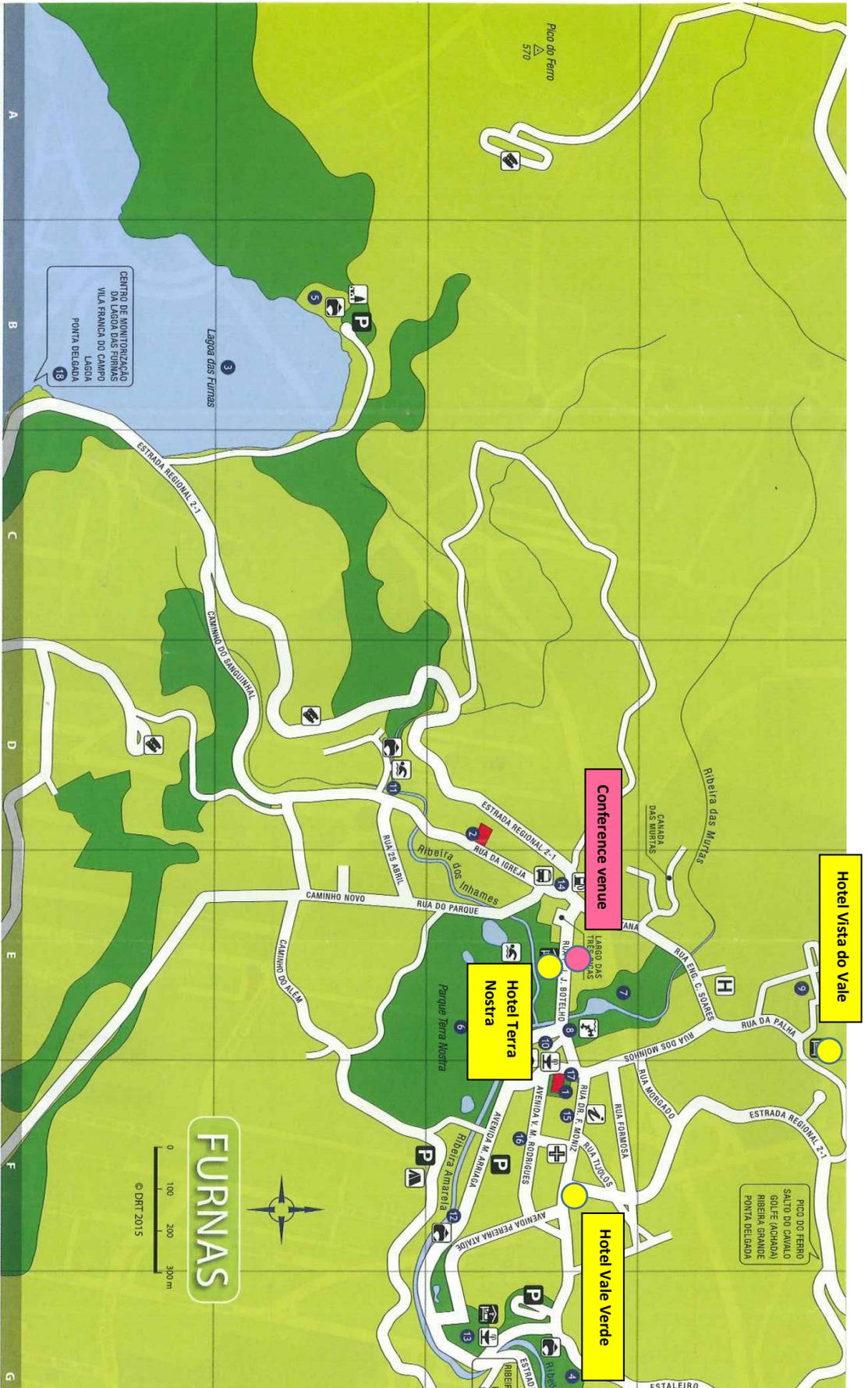
Other activities

We will offer the following other activities during the lunch breaks:

- Visit of the Furnas geothermal area with a stop by at the café Chalet da Tia Mercedes (run by a former extremophile researcher),
- Guided tour to Terra Nostra Botanical Garden with a horticulturalist.



Map of Furnas



FURNAS

- 1 Igreja Nossa Senhora da Alegria / Church of Nossa Senhora da Alegria / *Eglise Nossa Senhora da Alegria / Nossa Senhora da Alegria-Kirche* F3
- 2 Igreja de Santana / Church of Santana / *Eglise de Santana / Santano-Kirche* D3
- 3 Lagoa das Furnas / Furnas Lake / *Lac de Furnas / Furnas See* B2
- 4 Recinto das Caldeiras / Hot Springs Area / *Zone des Source Chaudes / Gebiet der HeiÙe Quellen* G3
- 5 Caldeiras da Lagoa das Furnas /
- 6 Sources Chaudes du Lac de Furnas / Furnas Lake Hot Springs / *HeiÙe Quellen bei Furnas See* B2
- 7 Parque Terra Nostra / Terra Nostra Park / *Parc Terra Nostra / Terra Nostra Park* E3
- 8 Parque das Murtas / Murtas Park / *Parc Murtas / Murtas Park* E3
- 9 Molho de Agua e Artesanato / Watermill and Handicrafts / *Molin à Eau et Artisanat / Wassermühle und Handarbeit* E3
- 10 Serviços Florestais / Forest Services / *Services du Forêt / Waldamt* F4
- 11 Banhos Fornos / Fornos Water Baths / *Bassins d'eau Ferrugineuse / Eisenhaltigen Thermalwasserbäder* E3
- 12 Poça da Dona Beija / Natural Spring - Pool / *Source Naturelle - Piscine /*
- 13 Poça da Tia Silvana / Natural Spring / *Source Naturelle / Warme Quelle* D2
- 14 Jardim das Quanturas / Garden / *Jardin / Parkanlage* G3
- 15 Cine Teatro Vale Fornos / Theatre Vale Fornos / *Théâtre Vale Fornos / Vale Form*
- 16 CTT - Correios e Telecomunicações / Post Office / *Poste / Post* F3
- 17 BS.P. - Políclia de Segurança Pública / Police / *Police / Polizei* F3
- 18 Táxis / Taxi Stand / *Station de Taxi / Taxistand* F3
- 19 Centro de Monitorização da Lagoa das Furnas / Furnas Lake Monitoring Centre / *Centre de Contrôle du Lac de Furnas / Furnas See Untersuchungszentrum* B1