

DXING BRAZIL

A North American Perspective

John Fisher

After reading all of these excellent technical articles, I'll bet you are ready for a break. Well, take your shoes off and relax, because we are going to go on a radio travelogue to the 5th largest country in the world, Brazil.

DX'ing Brazil is a study in contrasts; it offers challenges as varied as the country itself. There are low powered stations from the jungles of the Amazon on 120 and 90 metres and there are higher powered stations from the major cities on 16 and 19 metres. There are some stations that have been on the air since the 1920's and there are new stations coming on the air this year on the Brazilian "frontier". These extremes and contrasts, as we shall see, will be a constant feature as we discover Brazil and its radio scene.

I don't intend this to be the definitive article on the shortwave radio scene in Brazil. DX'ers in Brazil are the experts, but, I will describe the features of Brazilian shortwave stations from a North American viewpoint and I will also discuss why DX'ing these stations from North America does not seem to be as popular as DX'ing other parts of the world.

● AN INTRODUCTION TO BRAZIL

For a country that stretches over 4200 km from north of the equator to south of the 30th parallel, and over 4200 km from the watershed of the Andes to the Atlantic Ocean, it is not surprising that Brazil is a diverse country. The steamy Amazon jungle is miles (and years away) from the cosmopolitan cities of São Paulo and Rio de Janeiro, but the people in both places are Brazilians.

Because of its size and the variety of terrain, it is almost impossible to define what is typically "Brazilian" much in the same way as it is hard to define what is typically American or typically Canadian. Brazil is a country of extremes and contrasts. There is the industrial might and wealth found in the big cities of the south, living next door to the poverty of the favelas or urban slums. Third World poverty and hunger exist in the northeast. There are vast tracts of natural preserves in the Pantanal and Amazonia regions. Brazil is a nation of coexisting inconsistencies and this has an impact on the type of programs heard on Brazilian stations.

A Portuguese sea captain Pedro Alvares Cabral was the first European to discover Brazil in 1500. Since the Portuguese were in a landgrab race for new colonies with the Spanish, they quickly colonized the eastern coast from Recife to Rio. To work the agriculturally rich lands, the native peoples and black slaves from Africa were used. As a result, there is a largely Negro or mulatto population in the northeast of the country. Contact with the colonizers has proven fatal to the natives though. Between 2 and 5 million were thought to have lived on the lands that constitute present day Brazil when the Portuguese arrived in 1500. Now their numbers are estimated at around 200,000, located mostly in the remote interior.

Brazil, like the United States and Canada, owes a great deal to the waves of immigrants who have helped build the country. The largest group of immigrants arrived between 1884 and 1914 with the majority being Italian. In 1908 the Japanese began to arrive. Both groups helped develop a strong agricultural base in the temperate south of the country.

Following World War II, refugees from Europe thronged to Brazil and between 1974 and 1975, approximately 50,000 Portuguese from the former colonies of Angola and Mozambique arrived. As a result, the area from São Paulo to the south has a heavy European make-up, with large concentrations of Slavs, Polish, German, Italian, Swiss, Spanish and Japanese.

Brazil's independence was proclaimed by King Dom Pedro I on Sept. 7, 1822, (September 7 is celebrated as Brazilian independence day) but, it was during the reign of his son Dom Pedro II during the middle of the 19th century, that Brazil began to prosper. However, Emperor Dom Pedro was deposed in 1889 in an uprising led by the army. On November 15, 1889 (another national holiday), the Republic of Brazil was born.

A military junta took control in 1930 and power was assumed by strongman

BRAZIL • BRASIL

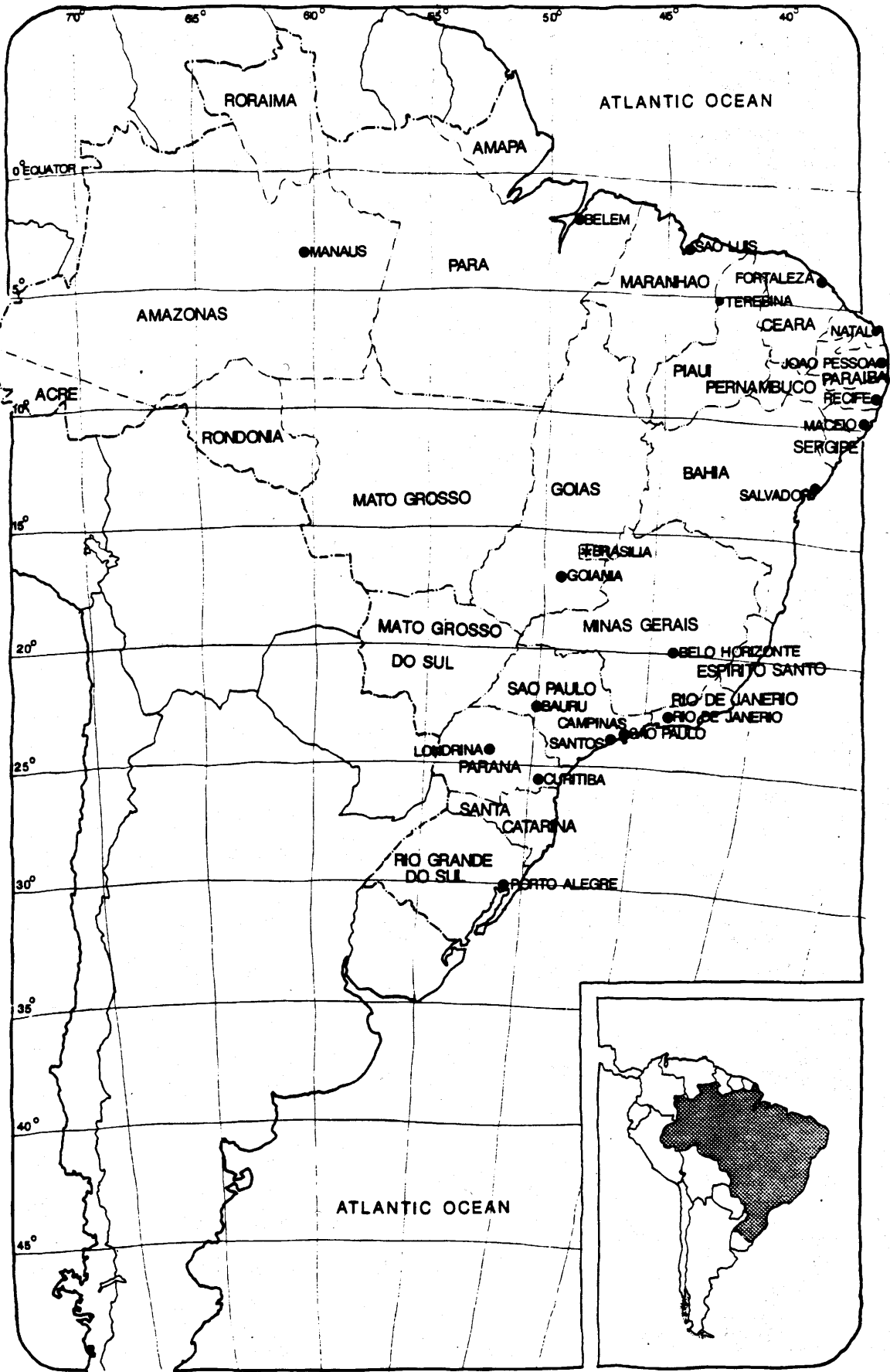


FIG. 1 MAJOR SWBC SITES IN BRAZIL BRYANT '89

Getulio Vargas, who alternated with military coups until finally being forced out in 1945 by the military. A series of short lived democratic regimes existed from 1945-1964. A highlight of this period was the building of the present capital of Brasilia by the dynamic president Juscelino Kubitschek. The next 5 presidents until 1985 were all military leaders. In 1985, Tancredo Neves was chosen to be President by the Electoral College made up of the Congress and representatives from the State Legislatures. Neves is generally regarded as being the first popularly elected President in the nations history. However, Neves fell ill and died before he could assume office. The reigns of power were then passed to José Sarney who remains as President today.

Brazil's economy has expanded dramatically in the last generation. In the past 25 years, it has embarked on an industrialization program that has produced the world's 8th largest economy, just slightly smaller than Canada's. This expansion has enabled Brazil to become the most self-sufficient country in the Western Hemisphere. With the exception of petroleum products, Brazil produces almost everything it needs from cars and computers to agricultural products. Even in the field of energy, Brazil is a world leader in the production of alcohol for automobile use.

● THE NEGLECTED GIANT

Brazil has never been one of the DX "hot spots". Many DX'ers avoid Brazil, or if they don't avoid it, they at least monitor it with less enthusiasm than they reserve for other targets. Why is this? Why is Brazil, "The Last DX Frontier"?

The lack of enthusiasm can't be due to the lack of Brazilian DX targets. A quick scan of the 1989 WRTH indicates that Brazil has 136 frequencies used by 108 stations and ranks behind only Peru (141 frequencies used by 137 stations) and more than Indonesia 127 frequencies (Source: fine tuning's 1988 Indo survey). DX abounds with many low powered stations (5 to 10 kW) in the 31, 25 and 19 meter International Bands, very low powered stations using 1 kW or less from small towns in the Amazon jungle and even experimental stations, broadcasting on frequencies outside of the normal shortwave bands.

Although some Brazilian stations have left the air in recent years (primarily in the larger cities that can also be served by AM or FM), a number of new stations have appeared. These new stations tend to be located in the Brazilian interior, where there has been an influx of population in search of cheap land. Due to the vast distances involved in the frontier, shortwave broadcasting has become an important part of the communication scene.

I believe that there are probably 4 reasons why DX'ers tend to neglect Brazil. All of these difficulties can be overcome, if the DX'er has the interest and desire.

1. Language

Probably the biggest reason that many DX'ers avoid Brazil is the Portuguese language. Although Spanish and Portuguese have similar origins, their sound patterns are significantly different. Portuguese tends to be a much more "nasal" language, sounding closer to the Nordic languages and Russian than to Spanish. It is also a sweetly flowing language, one word tends to flow into the next, making identification of individual words difficult.

Portuguese is tough to copy even on stations in the clear and it just doesn't cut through the noise and QRM the way a sharper language like Spanish or Chinese can. This makes a weak tropical band Brazilian signal sounds like it is buried in 10 feet of mud!

In his chapter "Recognizing Languages" in "Shortwave Listening With The Experts", Richard Wood says that Portuguese has been described as "Spanish spoken with marbles in the mouth" or "Spanish spoken by a Russian". As a result, many DX'ers comfortable with Spanish have shied away from learning to hear Portuguese. But for a Brazilian DX'er, a working knowledge of Portuguese develops in just the same way as it does for Spanish - by frequent listening!

One of the easiest ways to develop an understanding of Brazilian Portuguese (quite different from Lisbon Portuguese), is to listen to some of the stronger Brazilian outlets. Programming from Radio Guaiaba 11780, Radio Nacional Manaus 4845, Radio Difusora de Amazonas 4805 and of course, Radio Bras can help DX'ers recognize key Brazilian phrases and programming styles.

This "language barrier" can be converted to a benefit by the alert DX'er. There are currently only 3 active DX countries (Portugal not included) where Portuguese is spoken, Brazil, Angola and Mozambique. Because of propagation, Brazilian stations are normally not audible in North America at the same time as the Africans. When you recognize Portuguese on a tropical band frequency you can

usually determine whether it is Brazilian or African in origin.

2. Transmission Times

Since Brazil is located to the east of the rest of Latin America, local sign-on and sign-off times are earlier. The peak time to hear Brazilians tend to be in the morning when they sign-on, although there is also a period of good evening reception around 2300 to 0100 GMT. Unfortunately, this sign-on is at 0700 to 0900 GMT! DX'ers are a hardy breed, coping with late night and early morning DX sessions, but 0700 to 0900 GMT is a DX "no-mans land", neither late night or early morning; it is middle of the night, when many DX'ers would rather sleep.

3. Programming

The third factor that contributes to Brazilian stations not being popular DX targets relates to the type of programs typically heard on Brazilian shortwave outlets. Unlike Andean stations where a listener can hear a variety of local music types and special announcements, many Brazilian stations broadcast programming similar to North American medium wave stations. Many shortwave outlets simulcast the programming of their AM outlets and consequently, you will often hear typical pop music and commercial announcements. This can seem boring, especially to the QSL hunter who is looking for details for reception reports.

However, once you have become accustomed to these programs you begin to appreciate the beauty and diversity of Brazilian popular music. Brazil is one of the worlds most musical countries and it has a very developed homegrown music industry. If you listen carefully, you can detect traces of the many different cultures that make up Brazil as well as those two forms of music that Brazil has given to the world, the samba and the bossa nova. For those who appreciate ethnic music, Brazil is a treat. Rarely will you hear North American top 40 music. This is a dramatic contrast to those stations of Venezuela and Colombia who feed the listener a steady diet of North American music.

4. Frequencies

Brazilian stations tend to pile up on certain frequencies. There are many shortwave frequencies, especially in the 90 and 60 metre bands where two or more stations can be found. Fortunately, the Brazilian authorities practice some frequency management. The stations that cohabit shortwave channels are usually well separated geographically. By understanding the propagation of Brazilian stations to North America and knowing when to listen, it is often possible to hear more than one station on the same channel.

Several times in the past 10 years the Brazilian authorities have developed frequency plans for their shortwave stations. These plans have typically been implemented on a band by band basis. Now almost all 90 and 60 metre stations operate on frequencies ending in 5 kHz and 120 and 49 metre stations operate on frequencies ending in 10 kHz. By keeping stations at least 10 kHz apart, interference is reduced.

All of these "barriers" to DX'ing Brazil are easily surmountable if the DX'er has the desire and perseverance. The difficulty of the Portuguese language and the sometimes monotonous pop music programming that produces little verifiable details, can be overcome by listening often and becoming experienced enough to identify those features inherent in programs that seem to be featureless. The Brazilian DX'er needs to be dedicated though, to shake the cobwebs out the mind at 0730 UTC and stumble to the receiver, fully aware that there may not be anything to hear that morning.

● REGIONS OF BRAZIL

To appreciate the shortwave stations of Brazil we will tour the eight (8) geographic regions of the country, stopping to describe the stations on the way. Appendix 1 provides a listing of shortwave outlets in each of the 24 states with their current frequencies as provided by Brazilian DX'er Antonio Ribeiro da Motta. The regions are :

1. Rio de Janeiro
2. São Paulo
3. South
4. Central South

5. Central West
6. Bahia
7. Northeast
8. Amazonia

RIO DE JANEIRO



The city of Rio de Janeiro is probably the best known city in Brazil and possibly all of Latin America. It is South America's tourist capital and has been called by many, the most beautiful city in the world. There are many sights here that are familiar to North Americans including the beaches and Sugarloaf Mountain. Carnival is celebrated here most enthusiastically each February or March. In contrast to this view of a tourist city that is constantly at play, Rio is also home to a large and growing slum called "favelas". Populated by people from the countryside who have come to the big city in search of work, these ramshackle buildings fill the hills surrounding the city in dramatic contrast to the wealth found in and around the beaches below.

Although the shortwave scene in Rio is not as active as it once was (there were 12 outlets active here in 1976), there are still 8 stations in Rio and one in the city of Campos in Rio de Janeiro state. Probably the easiest heard of these stations is Radio Globo on 11805 and 6030 kHz, part of the huge Globo radio and TV network. Don Moore indicates that the Globo TV network is the fourth largest in the world.



SÃO PAULO

Although shortwave stations have closed down in the larger metropolitan areas in recent years, the state of Sao Paulo has the largest number of shortwave stations in Brazil with 23 currently active SWBC stations according to the 1989 WRTH.

The city of São Paulo is the fastest growing and the richest area in Brazil. It is the cultural, industrial and commercial center for the nation with multinational corporate headquarters located in its many skyscrapers. In many aspects it is similar to New York City right down to the way that Paulistanos flee their city on the weekend for Guarujá on the coast or Campos do Jordão in the mountains. The city's work ethic is built on its immigrant background. Seventy percent of São Paulo's inhabitants are descendants of immigrants, most of whom arrived between 1885 and 1914. For them and their descendants, São Paulo is Brazil's "big apple".

The city of São Paulo is located the state of São Paulo. The residents of the state called "Paulistas", inhabit a region about the size of Great Britain. This state contains everything from sandy beaches in Santos and the island of Guarujá, to lofty mountain plateaus, from colonial architecture to ultra modern resorts. The region contains some of Brazil's richest farmland. From this area comes almost half of the nation's coffee, cotton, fruit and vegetables.

From a DXer's perspective the area is as equally rich. There are 250 watt stations in the 120 metre band from towns like Limeira and Descalvado in the mountains which represent good DX challenges. At the other end of the spectrum,

there are the 10 kW stations in the 25, 31 and 49 metre international bands from São Paulo such as easily heard Radio Bandeirantes 6090, 9645 and 11925 kHz and Radio Excelsior on 6120 and 9585 kHz. The state of São Paulo, especially for the DX'er, offers something for everyone.



SOUTH

Moving south from São Paulo, one encounters the states of Rio Grande do Sul, Paraná and Santa Catarina. These states have maintained a very strong ethnic character from their large European immigrant population. The state of Rio Grande do Sul, on the borders of Uruguay and Argentina, in the far south of the country, is the home of Brazil's gauchos with their vast cattle ranches on the pampas. This ranching background is reflected in the names of some of the shortwave outlets in the state; Radio Gaúcha and Radio Pampa both in Porto Alegre. The city of Porto Alegre, with 2,250,000 people, is one of the most modern and fastest growing cities south of São Paulo. Standing at the junction of five rivers, it is also an important port.

The state of Santa Catarina is noted for its fine beaches and the German influence found in its architecture and food. The capital city of the state, Florianópolis, an island city with beaches on the ocean, is represented on the shortwave bands by 2 stations, Radio Guarujá on 5980 kHz and Radio Marumby on 6080 kHz.

Paraná state is home to the magnificent Iguazu Falls. Located on the border with Argentina, these falls are probably Brazil's most spectacular natural wonder. In the last few years a new shortwave station opened up here, Radio Cultura in Foz de Iguazu on 6105 kHz. The capital of the state is Curitiba, the site of Radio Clube Paranaense on 6040, 9725 and 11935 kHz.

By looking at an atlas, one can see that all of these three states, except for the northern portion of Paraná, lies south of the tropic of Capricorn. As a result, all of the stations in these states except for Radio Difusora and Radio Alvorada in Londrina operate on frequencies in the 49, 31 and 25 meter international bands.



CENTRAL SOUTH

The Central South region of Brazil contains the nation's modern capital city, Brasilia. This city was built literally in the middle of scrub trees, dust and jaguars in the late 1950's to encourage the development of the country's vast interior. If the migration of population since then is any indication, this move was successful. The city now acts as a transportation hub, with roads branching out to all parts of the country.

In addition to the modern capital, this region also contains historical Minas Gerais. The colonial towns of the mountains of the Minas region were built by Portuguese colonists who came to the region in the early 18th century to explore the area's gold fields, diamond and gem stone mines. In fact, the hills around the town of Ouro Preto (Black Gold) contained so much gold, that the region was called "minas gerais" or general mines. Because of this wealth, the region contains some beautiful 18th century architecture.

Brazil's national radio service originates from Brasilia. Radio Nacional's shortwave is designed to cover the Amazon region using 250 kW transmitters on 49, 25 and 19 meters. Because of this high power it can often be heard during our daytime, when the frequencies are clear of interference.

There are a number of shortwave outlets in Minas Gerais, with Radio Inconfidência best heard on 6010 kHz during the morning hours. Most of the other stations in this state are difficult catches.

The third state in this region, Espirito Santo located on the Atlantic coast, is represented by only one shortwave station, Radio Vitória on 4935 kHz, which can often be heard around 2300 UTC.



CENTRAL WEST

We now move into an area of geographical contrasts. The central west region of Brazil contains the Pantanal, a vast flood plain in the basin of the Paraguay River. The Pantanal is one of the last ecological frontiers on earth. Because of its low elevation, it floods during the rainy season, with only a few areas remaining above water level. Because of this it is home to a very wide range of animals, birds and fish. The area is bounded by the city of Cuiabá in the state of Mato Grosso to the north, and by Curumba in Mato Grosso do Sul in the south.

Moving north into the state of Goiás, the change in geography becomes evident. The elevated plateau of Goiás is home to gold mines and cattle ranches as it stretches from Brasilia in the south to the edge of the Amazon in the north. It was gold that first attracted settlers, the "Bandeirantes" from São Paulo who came into the interior. However they were more interested in plunder than in settling. It was the construction of Brasilia, that sparked a boom in the growth of Goiás.

In the last year a new state, Tocantins has been carved out of the state of Goiás. Unfortunately you will not find Tocantins on the map of Brazil. To date I have not been able to locate it on a map.

Since we are moving into the interior of Brazil where distances between towns are greater, there are increasing numbers of shortwave stations in the three states of the central west. Of these stations, the easiest to hear in North America are those from Goiás. Best bets are Radio Araguaia on 4905, Radio Anhanguera on 4915 and Radio Brasil Central on 4985.



BAHIA

The capital of the state of Bahia, Salvador, shows a blend of African, European and Indian influences. It was the first city that the Portuguese built up after they established their colony in Brazil in the 1500's. It was Brazil's capital city for a time. Fortunately, the city has been able to save many of its historical buildings and there are presently 25,000 buildings over 250 years old.

It is hard to enjoy the flavour of this interesting region on shortwave. There are at present only two shortwave stations from Bahia on the air. Radio Educadora de Bahia on 6020 and 9540 kHz. Neither frequency is an easy catch as both are heavily QRM'ed in both our mornings and evenings. The best time to catch this station is in the early morning after 0900 sign-on. The 9540 frequency is the best bet however, due to co-channel interference from the stronger Radio Gaucha on 6020 kHz. The second station from Bahia is the rarely heard Radio Sociedade de Feira from Feira da Santana on 4865 kHz.



NORTHEAST

The states of Sergipe, Alagoas, Pernambuco, Paraíba, Rio Grande do Norte, Ceará, Piauí and Maranhão make up the northeastern region of Brazil. This region comprises the "bulge" that sticks out into the Atlantic Ocean. This region differs from Bahia in that there is little of the African influence here.

Due to the relatively small sizes of these states, there is little shortwave activity in this region. The states of Sergipe and Alagoas are the only two Brazilian states with no current shortwave activity. Hearing the other states of the northeast is quite a DX challenge.

From the state of Pernambuco, Emisora Rural A Voz de São Francisco operates on 4945 kHz, although I have not seen any recent reports of it. Radio Pioneira in Piauí state is occasionally heard on 5015 kHz. Rio Grande do Norte's sole shortwave representative is Radio Poti on 4965 kHz. I have not seen any recent North American reports of any of the three stations in Ceará state, so it is hard to say which of these represent the best bet. According to Antonio Ribeiro da Motta, only Radio Educadora Cariri on 3255 kHz is active. Maranhão is probably the easiest state in the North east to hear. Radio Timbara on 4975 kHz is often audible in the morning.



AMAZONIA

As we move into the Amazon region, we enter an exotic area for both traveller and DX'er. This is truly the last frontier for the Brazilian DX'er and with the boom in population, there has also been an increase in shortwave activity.

The Amazonia regions includes the states of Para, Amapá, Roraima, Rondônia, Amazonas and Acre. Radio Nacional operates a network of stations on 60 and 90 metres to cover this area from Boa Vista, Cruzeiro do Sul, São Gabriel de Cachoeira, Tabatinga, Porto Velho, Manaus and Macapá.

It is within this region that an future growth in Brazilian shortwave will occur. The area to be covered is vast, distances between towns are too far to cover with medium wave, so shortwave appears to be the logical choice. New stations are planned for Rio Branco, Acre on 2460 and Rolim de Moura, Rondônia on 4775.

There are also several experimental stations operating from Acre state on out-of-band frequencies between the 90 and 60 metre bands. These stations represent real DX challenges in North America.

● PROPAGATION

In a country as large as Brazil, an understanding of the propagation between the various parts of Brazil and North America is essential to the DX'er. The differences in sunrise times across the country can provide the opportunity to hear two different stations from different parts of the country, operating on the same frequency.

Since Brazil is so large, a DX'er needs to know where the individual stations are located so that when reception conditions are good from one region, the DX'er can go after other rare stations in that same general area. This is important since propagation from one Brazilian region can be significantly different than that from another.

Reception conditions of Brazilian broadcasters on the international bands above 49 metres, does not appear to be strongly affected by the seasons. Conditions in the local evening hours may be slightly better during our local winter and reception in the morning may be slightly better in summer, but in general, good reception on these bands is possible all year round. The prime times on the international bands are 0700 to 1000 GMT and 2200 to 0100 GMT.

However, as with most DX targets, it is in the tropical bands that the real action occurs. The effect of sunrise and sunset conditions are important when DX'ing Brazilian stations below 49 metres.

Because the "bulge" of Brazil's northeast (which receives the country's first sunrise) lies on the equator, the sunrise time in this region does not vary more than half an hour from season to season. As a result, except for a couple of weeks near the winter solstice when the far eastern tip of Brazil receives an early wake-up call, Brazil is always in complete darkness at 0800 GMT.

With the increased ionization occurring from the local Brazilian sunrise onwards, the Brazilian signals on the tropical bands fade out when most of North America is still in darkness. The stations in Brazil's northeast always are the first ones to fade out in the mornings. Similarly, the stations at the western end of Amazonia, in Acre, Rondônia, Amazonas and Roraima will be the last ones to fade out. During the summer time in North America, our sunrise in the eastern part of the continent, will precede that of the Amazonia region.

At the equinoxes, the slope of the daylight/darkness terminator is essentially vertical (Figures 2 to 5), and stations fade out from east to west. However by the solstices, the slope of the terminator changes. In December, it runs from northeast to southwest and in June it runs from northwest to southeast. This does not significantly alter the fade out times of those stations near the equator, but it does affect those in the south of the country.

In December, stations along the eastern coast fade out between 0800 and 0830 GMT. For those stations which sign-on at 0700 GMT this does not represent much of a problem, but for those stations which come on at 0800 GMT, it means that there is a very short window before the tropical band stations fade out.

By June the situation has changed. Reception of tropical band signals from the south of Brazil are dictated by our local sunrise. Stations in Rio and São Paulo are in darkness until 0930 GMT, which is approximately local sunrise at my QTH. People listening from locations west of mine, will obviously have longer openings than I do. The slope of this terminator can be used to separate stations on the same frequency. As an example, there are two stations operating on 4825, Radio Bragança in the state of Pará and Radio Canção Nova in the state of São Paulo. In December, sunrise at Canção Nova occurs around 0830 GMT, while it does not reach Radio Bragança until 0900 GMT. There is therefore a window of about 30 minutes after the fadeout of Canção Nova during which Bragança can be heard.

A second tropical band opening to Brazil occurs during the early evening hours after Brazil is in darkness. The opening occurs between 2300 and 0100 GMT

during our winter and from 0000 to 0100 GMT in our summer and tends to produce good reception from southern Brazil on 120 and 90 metres. This peak in reception does not seem to be as pronounced for stations from Amazonia, which tend to be heard at the same level throughout the evening until their sign-off. The stations from the south tend to peak up and then fade out by 0100 GMT.

Unlike Indonesian DX'ing, I have not noted enhanced reception conditions during grey lines between my Ontario QTH and Brazil. As I mentioned before, reception conditions to southern Brazil will often be enhanced for up to 1 hour after my local sunset, but by this time the Brazilian stations have been in darkness for several hours. Similarly, in the morning hours, stations will pick up slightly at Brazilian sunrise, but my QTH is still in darkness. I do not know the reason for the lack of enhancement during greylines. While greylines to Southeast Asia are becoming better known and understood, the greyline phenomena to South America appears to be an area in need of study.

● VERIFYING THE BRAZILIAN STATIONS

Since Brazilian stations tend to be ignored by listeners, it would follow that they are also ignored by QSL hunters. I'm pleased to report that in general, Brazilian stations are better verifiers than most of other stations in South America. They do not receive as many reports and have not yet become overwhelmed with reports like stations in the Andes region.

Obviously, a Portuguese report is a must. Sure, a few stations send out English/Portuguese or multilingual cards, but it is hit or miss as to whether the one or two people at the station who might understand English will be the ones who get your report. So make that reception report in the language that will be understood at the station. The best Portuguese reporting guide that I have found is Gerry Dexter's "Portuguese Language Lab". If you are serious about QSL'ing Brazilians, you will need a copy.

It also helps to address your report to the person at the station who actually signs the QSLs. The Brazilian station summary in Fine Tuning's "DX'ers Guide To Latin America" and Radio Nuevo Mundo's "LA DX'ing" are good sources of verie signers.

Brazil has been experiencing astronomical inflation, leading to the creation of a new units of currency twice in the past couple of years. If you are going to use mint stamps for return postage, use them quickly before they become worthless. A much safer form of return postage is the United States "Greenstamp" (US \$1.00). IRC's are too pricey and lead to inevitable exchange problems at the station's end.

In order to keep the rate of reply from Brazilian stations high, please do your part and send them a thank-you note. As Don Moore has observed, many Latin American stations have stopped verifying because they never hear from DX'ers after they received their QSL. "The Thank You Lab" in Fine Tunings "DX'ers Guide To Latin America", 1989 edition can provide you with the necessary phrases to thank the station. This will help all of us.

● SUMMARY

Brazil has long been ignored by DX'ers in their quest for rare DX. This is unfortunate since Brazil presents a large number of DX targets that range from the easy to the very difficult. Give them a try and enjoy the fun of DX'ing Brazil.

● REFERENCES

1. Sizer, Al., Brazil, FRENEX, October, 1983
2. Moore, Don, Brazil: Don't Ignore It - DX It, FRENEX, March 1989
3. Wood, Dr. Richard E., Recognizing Languages, Shortwave Listening With The Experts, Howard W. Sams & Co., Indianapolis, IN, 1986.
4. Fodor's Brazil 1988, Fodor's Travel Publications, New York, NY, 1987.
5. DX'ers Guide To Latin America, Fine Tuning, 1989
6. da Motta, Antonio Ribeiro, Brazilian Shortwave, Medium Wave and FM Stations List No. 9, Sao José dos Campos, Brazil, 1988
7. LA DX'ing, 4th Edition, Radio Nuevo Mundo, Tokyo, Japan, 1987
8. Insight Guides Brazil, APA Publications (HK) Ltd., Singapore, 1989

///

APPENDIX 1

BRAZILIAN SHORTWAVE STATIONS - BY STATE

STATION	FREQ	CITY	STATE	S/ON	S/OFF	POWER (KW)	// FREQS
R.Transamazônica	2410	Senador Guionard	AC	1000	0100	1	
R.Progresso do Acre	2460	Rio Branco	AC			1	on air 88 ?
R.Educadora 6 de Agosto	3400	Xapuri	AC	1000	0200	2	
R.Educadora 3 de Julho	3570	Brasiléia	AC	0900	0300	1.5	
R.Difusora	4115	Sena Madureira	AC	1000	0230	0.25	
R.Nacional	4765	Cruzeiro do Sul	AC	0900	0400	10	
R.Verdes Florestas	4865	Cruzeiro do Sul	AC	1000	0300	5	
R.Diffusora Acreana	4880	Rio Branco	AC	0900	0530	5	
R.Vale do Rio Madeira	3205	Humaitá	AM	0900	0300	5	on air 88
R.Nacional	3375	São Gab da Cachoeira	AM	0800	0300	5	
R.Educação Rural	3385	Tefé	AM	0900	0200	1	
R.Difusora do Amazonas	4805	Manaus	AM	0900	0300	5	
R.Nacional	4815	Tabatinga	AM	0800	0400	10	
R.Nacional	4845	Manaus	AM	0800	0430	250	
R.Baré	4895	Manaus	AM	0800	0300	1	
R. A. Crítica	4935	Manaus	AM	2200	0200	5	
R.Alvorada	4965	Parintins	AM	0900	0300	5	
R.Educação Rural	5035	Coari	AM	0830	0230	1	
R.A Crítica	5055	Manaus	AM	1100	0200	5	
R.Rio Mar	6160	Manaus	AM	0900	2200	7.5	//9695
R.Equatorial	3375	Macapá	AP	2100	1000	1	
R.Nacional	4915	Macapá	AP	0800	0300	10	
R.Sociedade de Feira	4865	Feira da Santana	BA	0730	0300	1	
R.Educadora da Bahia	6020	Salvador	BA	0900	0200	10	//9540
R.Educadora Cariri	3255	Crato	CE	0900	0200	1	
R.Dragão del Mar	4925	Fortaleza	CE			5	inactive
R.Nac da Amazonia	6180	Brasilia	DF	0800	0300	250	//11780
R.Capixaba	4935	Vitória	ES	24 hrs		1	
R.Carajás	4885	Anápolis	GO	0800	0300	0.5	
R.Araguaia	4905	Araguaia	GO	0800	0300	1	
R.Anhanguera	4915	Goiânia	GO	0700	0400	10	
R.Difusora	4935	Jataí	GO	0900	0200	2.5	
R.Brasil Central	4985	Goiânia	GO	24 hrs		10	
R.Diffusora do Maranhão	4755	São Luis	MA	24 hrs		2	inactive ?
R.Ribamar	4785	São Luiz	MA	0800	0300	5	
R.Timbira	4975	São Luiz	MA	0800	0300	2.5	
R.Boas Novas	6000	São Luis	MA			5	construction permit
R.Clube de Varginha	3245	Varginha	MG	0900	0100	1	
R.Congonhas	4775	Congonhas	MG	0900	0100	1	
R.Itatiaia	4805	Belo Horizonte	MG	0800	0300	0.5	// 5970
R.Por Um Mundo Melhor	4855	Governador Valadares	MG	0800	0300	1	inactive
R.Difusora	4945	Poços de Caldas	MG	0800	0300	1	
R.Inconfidência	6010	Belo Horizonte	MG	24 hrs		25	//15190
R.Guarani	6050	Belo Horizonte	MG	0800	0300	10	
R.Dourados	3375	Dourados	MS	0800	0400	5	inactive
R.Educação Rural	4755	Campo Grande	MS	0800	0500	10	
R.Difusora	4795	Aquidauana	MS	0800	0300	1	
R.Atalaia	4835	Corumbá	MS	1000	0315	5	inactive
R.Clube Campograndense	4895	Campo Grande	MS			5	construction permit
R.Diffusora	3275	Cáceres	MT	0800	0400	1	inactive
R.Portal da Amazônia	4775	Cuiabá	MT	0800	0300	1	
R.Aruanã	4855	Barra do Garça	MT	0800	0300	1	
R.Clube	4955	Rondonópolis	MT	0800	0300	2.5	
R.Cultura	5015	Cuiabá	MT	24 hrs		5	
R.TV Sentinela	3285	Obidos	PA			1	construction permit
R.Liberal	3325	Belém	PA	24 hrs		5	
R.Rural	4765	Santarém	PA	0800	0300	10	
R.Educadora	4825	Bragança	PA	0830	0200	5	
R.Clube do Pará	4885	Belém	PA	0800	0300	5	
R.Marajoara	4955	Belém	PA	0830	0300	10	
R.Jornal da Transamazônica	5025	Altamira	PA	0800	0200	5	
R.Cultura do Pará	5045	Belém	PA	24 hrs		10	
R.Borborema	5025	Campina Grande	PB	0830	0300	1	
Em.Rural A Voz do S.Fran	4945	Petrolina	PE	0755	0300	1	
R.Pioneria	5015	Teresina	PI	0700	0300	1	
R.Alvorada	3335	Londrina	PR	0800	0300	5	
R.Difusora	4815	Londrina	PR	0800	0400	10	
R.Clube Paranaense	6040	Curitiba	PR	0800	0300	7.5	//9725; 11935
R.Universo	6060	Curitiba	PR	24 hrs		10	//9565; 11905

BRAZILIAN SHORTWAVE STATIONS - BY STATE - CON'T

STATION	FREQ	CITY	STATE	S/ON	S/OFF	POWER (KW)	// FREQS
R.Cultura	6105	Foz de Iguacu	PR	0800	2400	5	//9530; 11745
R.Novas de Paz	9515	Curitiba	PR	0800	0300	10	//6080 (construction)
R.Jornal do Brasil	4875	Rio de Janeiro	RJ	0800	0500	10	
R.Relógio Federal	4905	Rio de Janeiro	RJ	0730	0330	5	
R.Cultura	4955	Campos	RJ	0700	0330	2.5	
R.Copacabana	5015	Rio de Janeiro	RJ	24 hrs		1	
R.Continental	5055	Rio de Janeiro	RJ	0800	0300	5	inactive
R.MEC	5990	Rio de Janeiro	RJ	1500	0300	7.5	//9600;11950;17875 (all irregular)
R.Globo	6030	Rio de Janeiro	RJ	0900	0300	10	//11805
R.Capital	6070	Rio de Janeiro	RJ	0800	0300	7.5	
R.Nacional	9705	Rio de Janeiro	RJ	0800	0315	7.5	
R.Poti	4965	Natal	RN	0700	0300	1	
R.Educadora	3375	Guajará Mirim	RO	0900	0200	5	
R.Amarela	4775	Rolim Moura	RO			5	construction permit
R.Caiari	4785	Porto Velho	RO	0800	0500	1	
R.Nacional	4945	Porto Velho	RO	0900	0200	50	
R.Marioto	5025	Ji-Paraná	RO	0700		5	
R.Nacional	4875	Boa Vista	RR	0900	0430	10	
Fund. Bras. de Comun.	5965	Santa Maria	RS			10	//11705 construction
R.Guaíba	6000	Porto Alegre	RS	0830	0400	7.5	
R.Saúcha	6020	Porto Alegre	RS	24 hrs		7.5	//11915
R.Paapa	6160	Porto Alegre	RS	0800	0300	10	//9550; 11890 (all inactive)
R.Suarujá	5980	Florianópolis	SC	0800	0300	10	
R.Marumby	9665	Florianópolis	SC	0900	2400	10	
R.Educadora	2380	Limeira	SP	24 hrs		0.25	
R.São Carlos	2420	São Carlos	SP	0800	0300	1	
R.Cacique	2470	Sorocaba	SP	1700	0400	1	inactive
R.Dito do Seteabro	2490	Descalvado	SP	0900	0200	0.25	
R.Ribeirão Preto	3205	Ribeirão Preto	SP	0700	0400	1	
R.Clube de Marília	3235	Marília	SP	0800	0400	0.5	
R.Dif Universitária	3325	Guarulhos	SP	0800	0330	2.5	
R.Cultura	3365	Araraquara	SP	0730	0300	1	
R.Brasil	4785	Campinas	SP	0700	0500	1	
R.Canção Nova	4825	Cachoeira Paulista	SP	0800	0300	10	//6105
R.Meteorologia Paulista	4845	Ibitinga	SP	0830	2200	1	
R.Difusora	4925	Taubaté	SP	0730	0300	1	
R.Iguatemi	4975	Osasco	SP	0900	0300	1	
R.Tupi	4975	Sao Paulo	SP	0900	0300	1	
R.Aparecida	5035	Aparecida	SP	0800	0300	10	//6135; 9630
R.Difusora	5045	Presidente Prudente	SP	0800	0400	1	
R.Gazeta	5955	São Paulo	SP	0700	0300	5	//9685
R.Bandeirantes	6090	São Paulo	SP	0700	0500	10	//9645; 11925
R.Globo	6120	São Paulo	SP	0900	0200	7.5	//15265
R.Record	6150	São Paulo	SP	1000	2200	7.5	//9505; 11965; 15135
R.Cultura	6170	São Paulo	SP	24 hrs		7.5	//17815;9615
R.Difusora Possense	6250	Sto Antonio de Possen	SP	0800	0200		unofficial
R.Excelsior(Globo)	9585	São Paulo	SP	0900	2200	10	
R.Clube	15415	Ribeiro Preto	SP	0800	0300	1	

STATES NOT ON THE AIR

Alagoas
Sergipe

STATE ABBREVIATIONS

AC = Acre	MA = Maranhão	RJ = Rio de Janeiro
AM = Amazonas	MG = Minas Gerais	RN = Rio Grande do Norte
AP = Amapá	MS = Mato Grosso do Sul	RO = Rondônia
BA = Bahia	MT = Mato Grosso	RR = Roraima
CE = Ceará	PA = Pará	RS = Rio Grande do Sul
DF = Distrito Federal	PB = Paraíba	SC = Santa Catarina
ES = Espírito Santo	PE = Pernambuco	SP = São Paulo
GO = Goiás	PI = Piauí	
	PR = Paraná	