Study of urban climate as a basis for adaptation and planning in Chilean cities

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- In Chile, like in most of Latin American cities, urban climates are not considered in urban planning and design
- Especially during the last decades, urban growth has been a very relevant environmental transformation produced under a neoliberal socioeconomic model that privilege free market and the privatization of resources and places, and, as a consequence, a reduction of public policies related with urban development and environmental protection
- Chile is usually presented as an exemplar of socioeconomic development following neoliberal premises.
- Chile has the highest GDP and HDI in Latin America but also the highest GINI Coefficient that measures social inequality
- Climatic hazards and risks, air pollution and an uneven distribution of climate and aire quality are pervasive and increasing issues in cities dominated by social and spatial segregation
- Urban climate are mainly a political issue of social and environmental justice
- The dialog among researchers (interdisciplinarity) , decision makers and society (governance) are an important necessity in the whole region

Our research Project supported by the Chilean National Science Foundation Is studying cities located in quite contrasting regional climates like
Atacama desert, Mediterranean and Temperate Mediterranean regions which have or are still confronting severe extreme events like droughts, floods, wood fires and air pollution

City	Population	Temperature annual average		Total annual precipitation	Number of urban measuring instruments
		Rural station	Urban station		
Antofagasta	309.832	17,4	19,5	1,7	9
Calama	143.084	14,5	16,3	5,7	8
Valparaíso	282.448	13,4	16,1	372,5	16
Santiago	4.837.295	16,2	23,2	312,5	39
Concepción	215.413	14,4	16,2	1.110	12
Chillán	150.396	14,4	15,5	1.107	8

Table 1. Latitude, population, average rural and urban temperatures and number of measuring instruments installed in selected Chilean cities

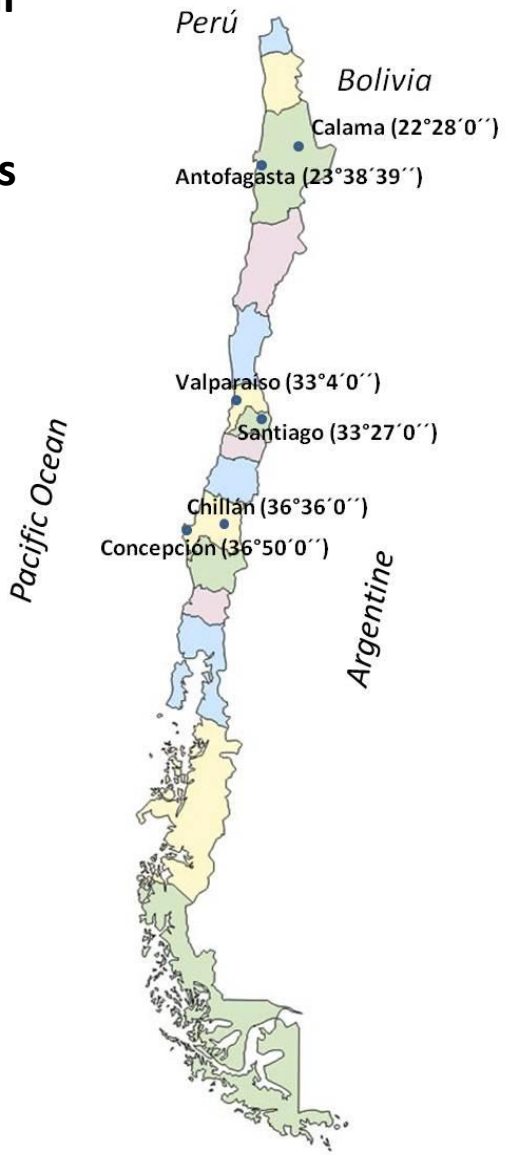

Figure 1. Location of selected cities.

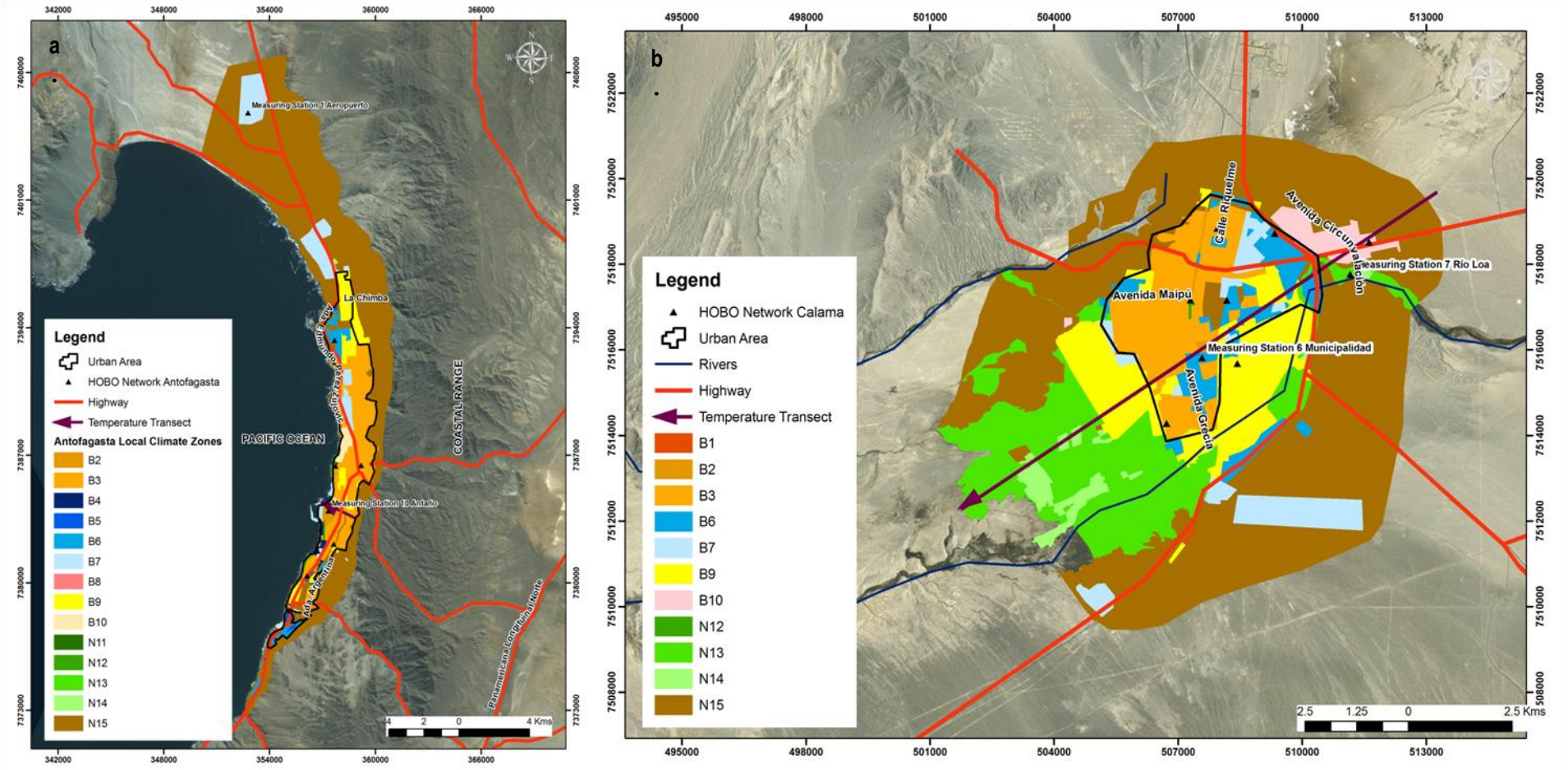

Figure 3. Local Climate Zones in the arid cities of Antofagasta (a) and Calama (b), Northern Chile

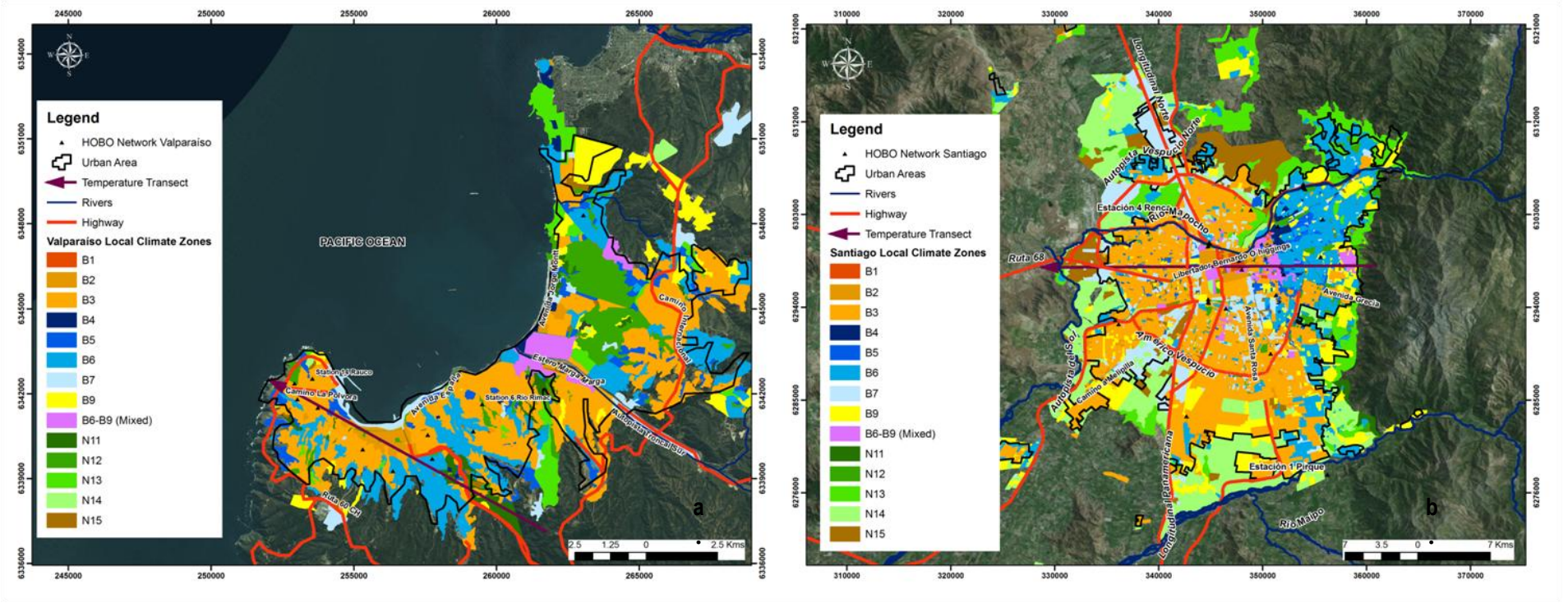

Figure 4. Local Climate Zones in the Mediterranean Climate Type cities of Valparaiso (a) and Santiago (b), Central Chile


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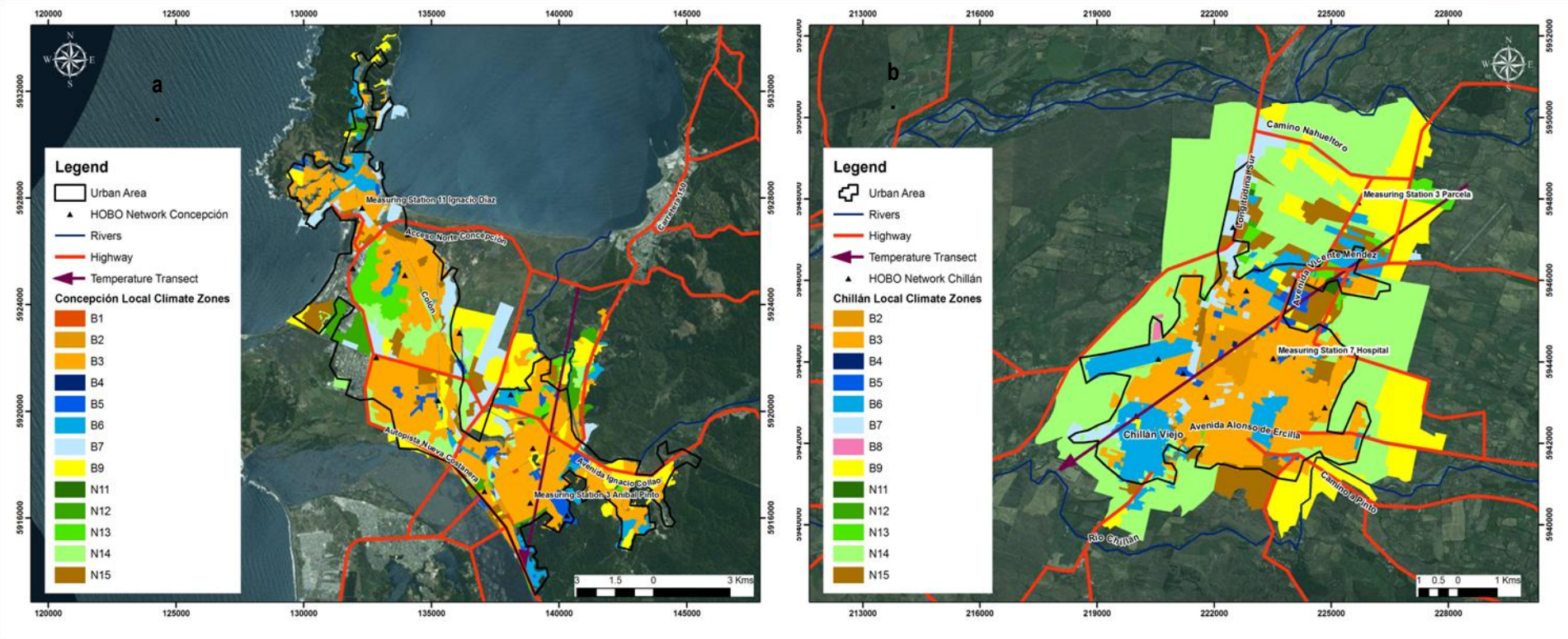
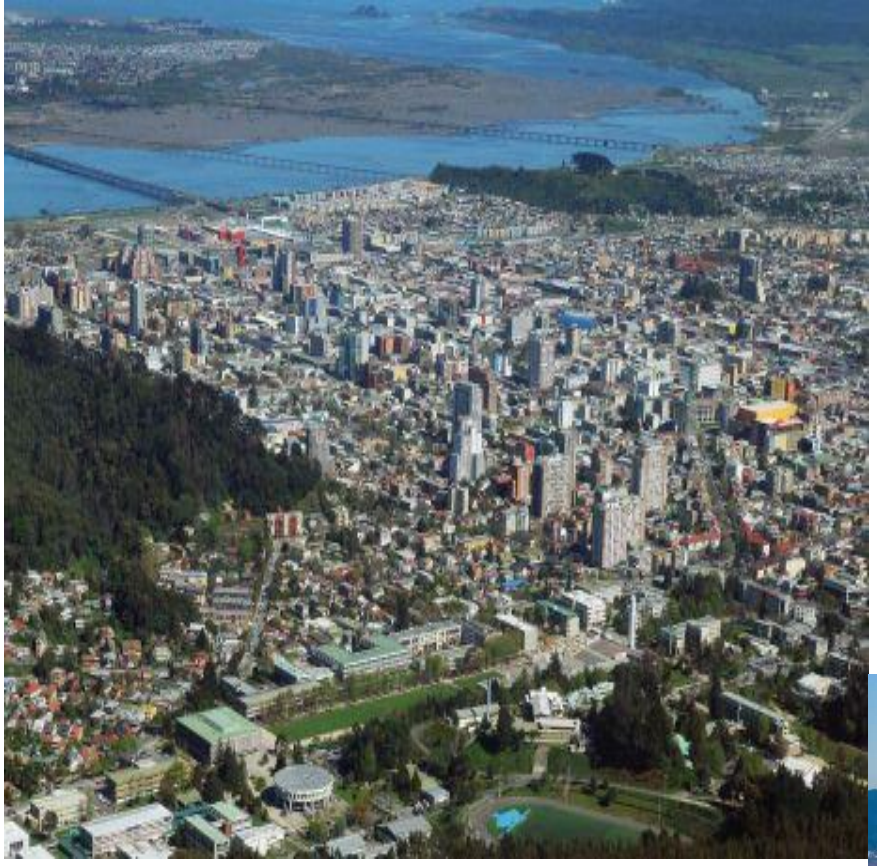
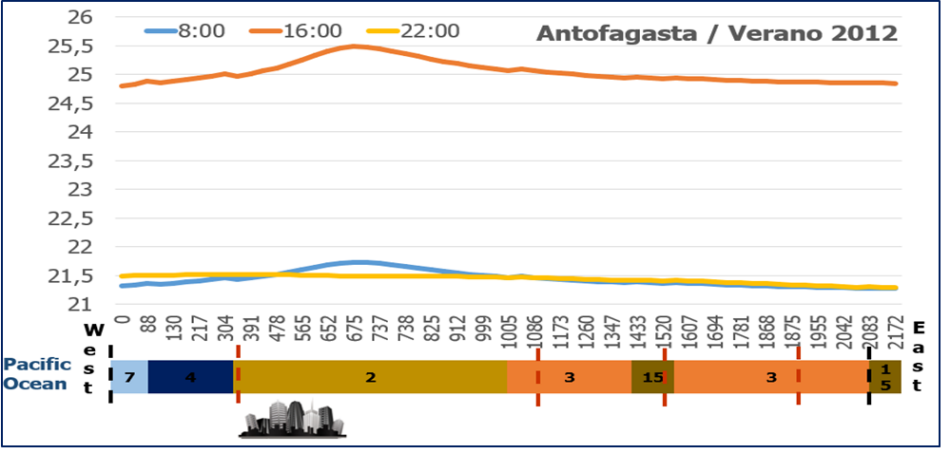
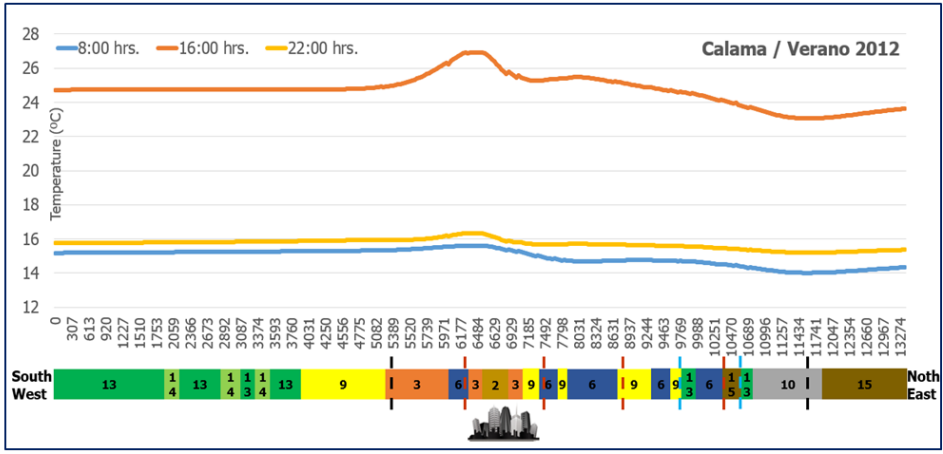
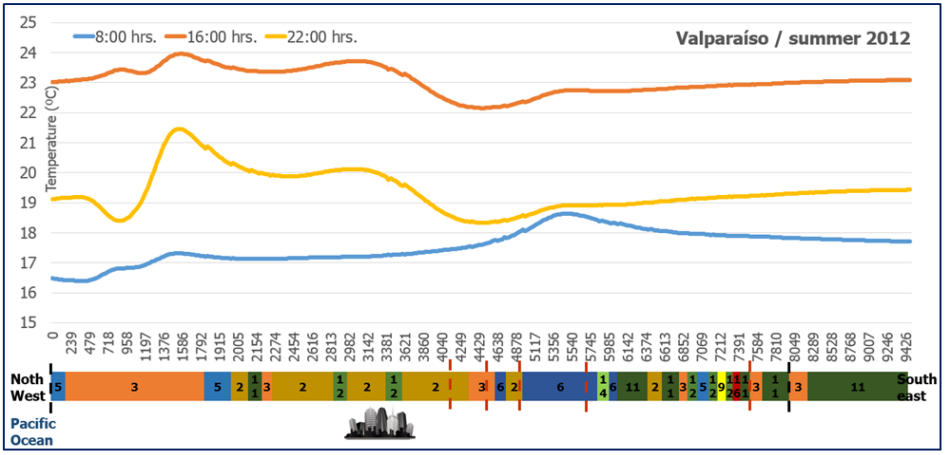


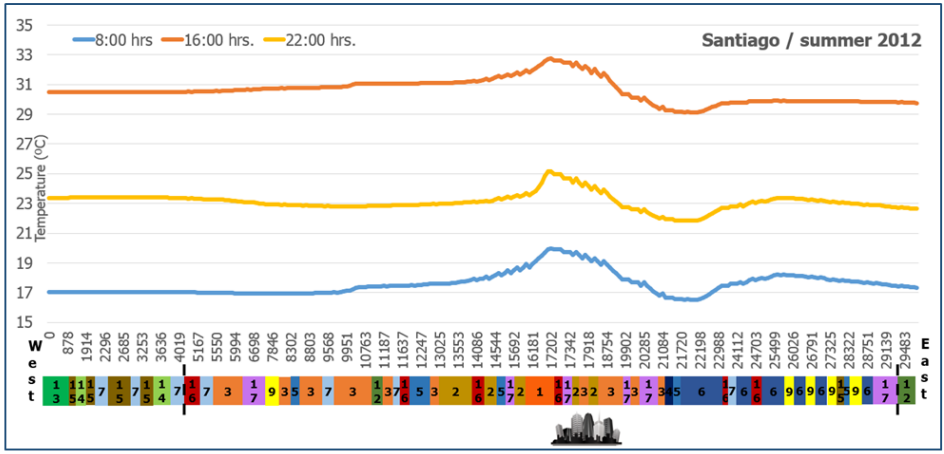
Figure 5. Local Climate Zones in the Southern Border of Mediterranean Climate Types cities of Concepción (a) and Chillán (b)

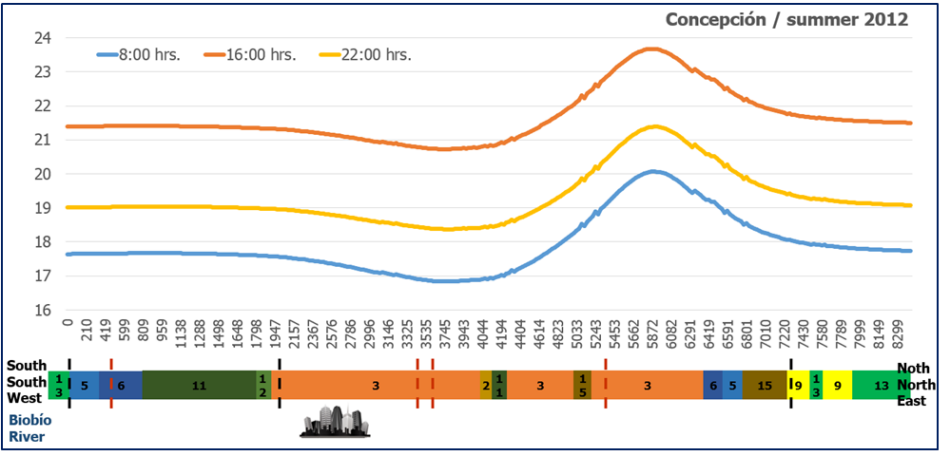












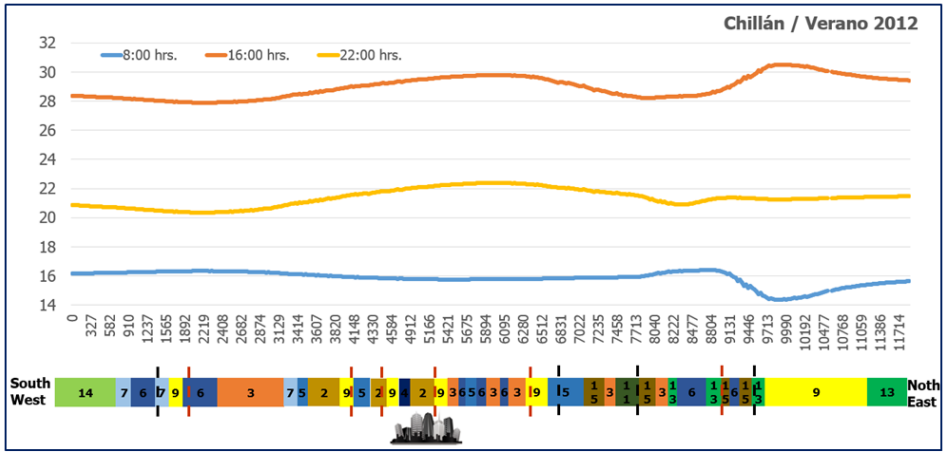


Figure 6. Rural-urban thermal gradient of cities of Antofagasta, Calama, Valparaíso, Santiago, Concepción and Chillán.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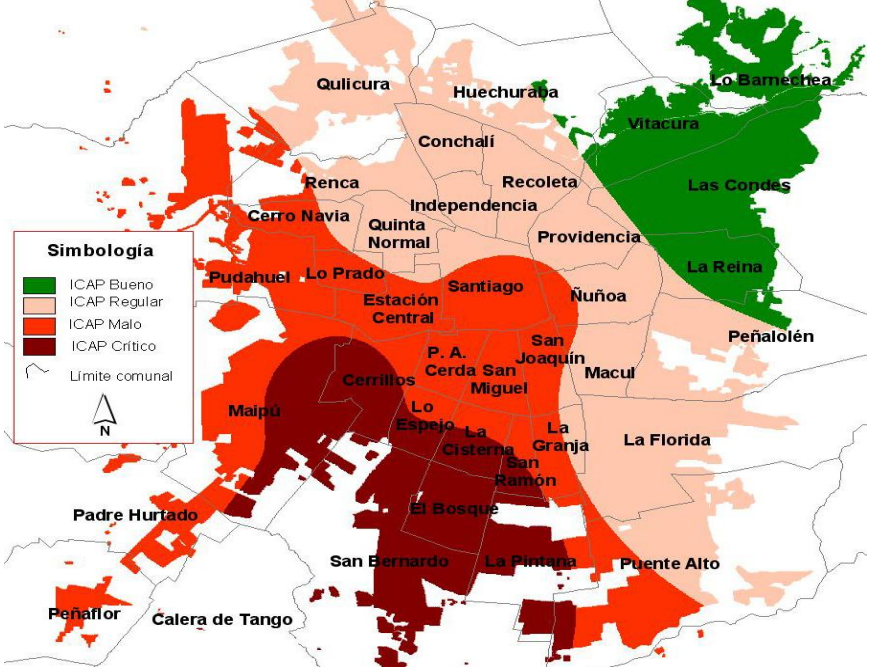
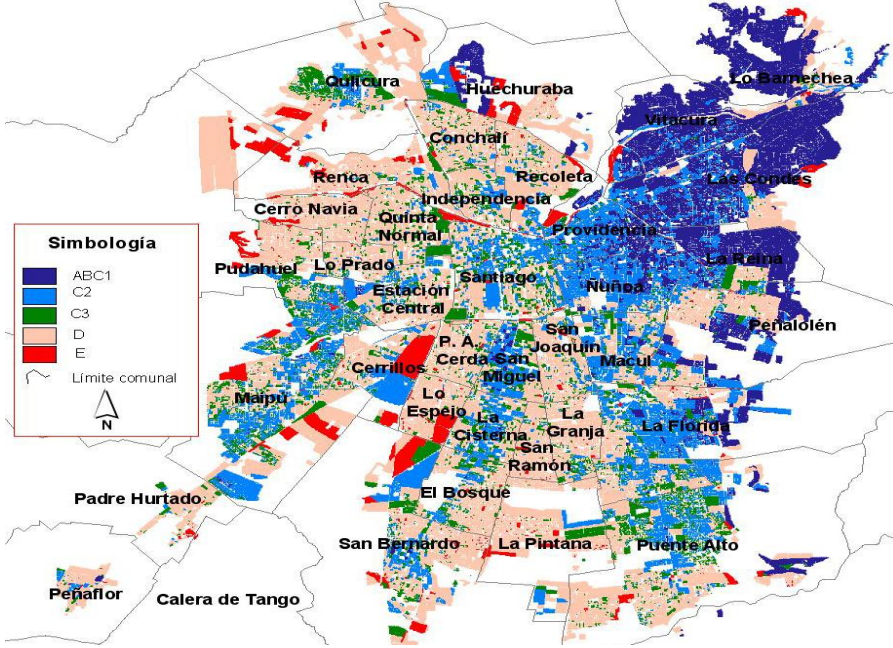
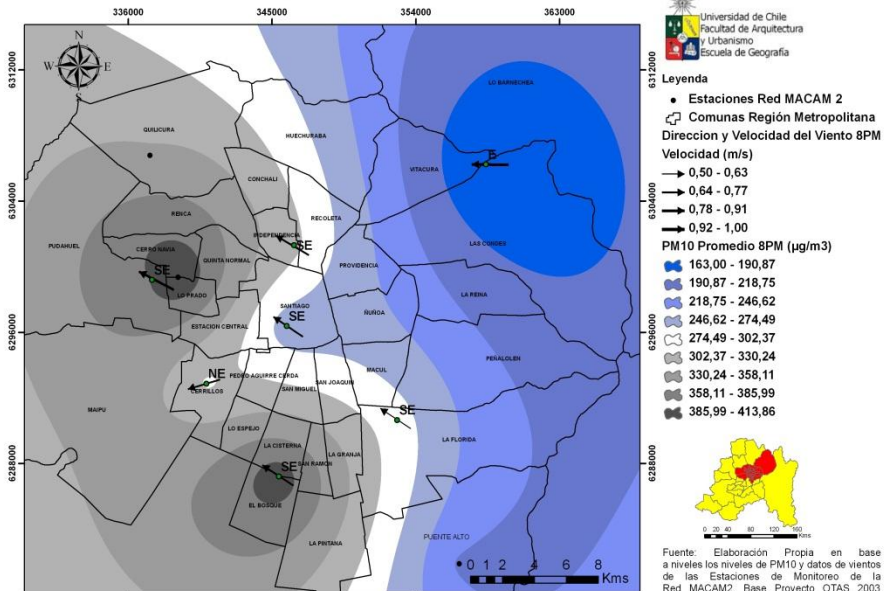




Contaminación por PM10 y Vientos en Santiago
11 de Mayo 2009, 08:00PM



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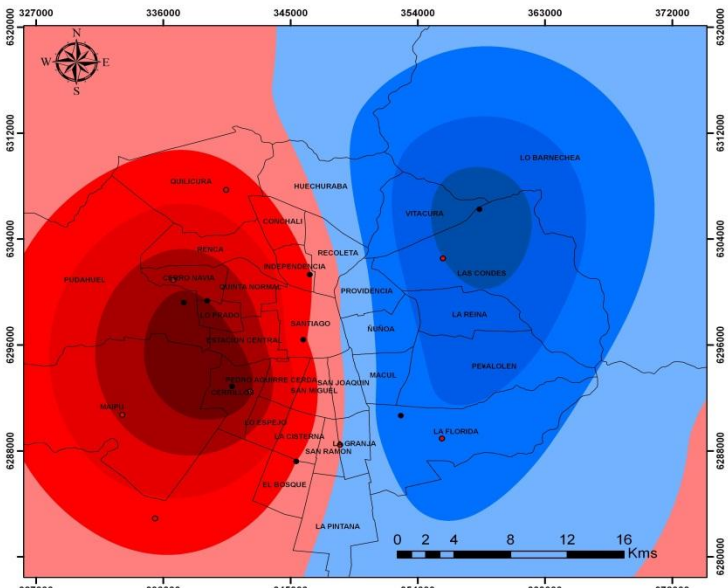
Leyenda
- Estaciones Red MACAM 2
- Comunas Región Metropolitana

Direccion y Velocidad del Viento 8PM
Velocidad (m/s)
- 0,50 - 0,63
- 0,64 - 0,77
- 0,78 - 0,91
- 0,92 - 1,00

PM10 Promedio 8PM (µg/m3)
- 163,00 - 190,87
- 190,87 - 218,75
- 218,75 - 246,62
- 246,62 - 274,49
- 274,49 - 302,37
- 302,37 - 330,24
- 330,24 - 358,11
- 358,11 - 385,99
- 385,99 - 413,86

Fuente: Elaboración Propia en base a niveles los niveles de PM10 y datos de vientos de las Estaciones de Monitoreo de la Red MACAM2. Base Proyecto OTAS 2003

Temperatura Promedio en Santiago
11 de Mayo 2009, 08:00PM



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- Datalogers
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Temperatura Promedio 8PM (°C)
- 12,17 - 12,41
- 12,41 - 12,65
- 12,65 - 12,89
- 12,89 - 13,13
- 13,13 - 13,37
- 13,37 - 13,61
- 13,61 - 13,84
- 13,84 - 14,08
- 14,08 - 14,326

Fuente: Elaboración Propia en base a niveles los niveles de temperatura de las Estaciones de Monitoreo de la Red MACAM2. Base Proyecto OTAS 2003