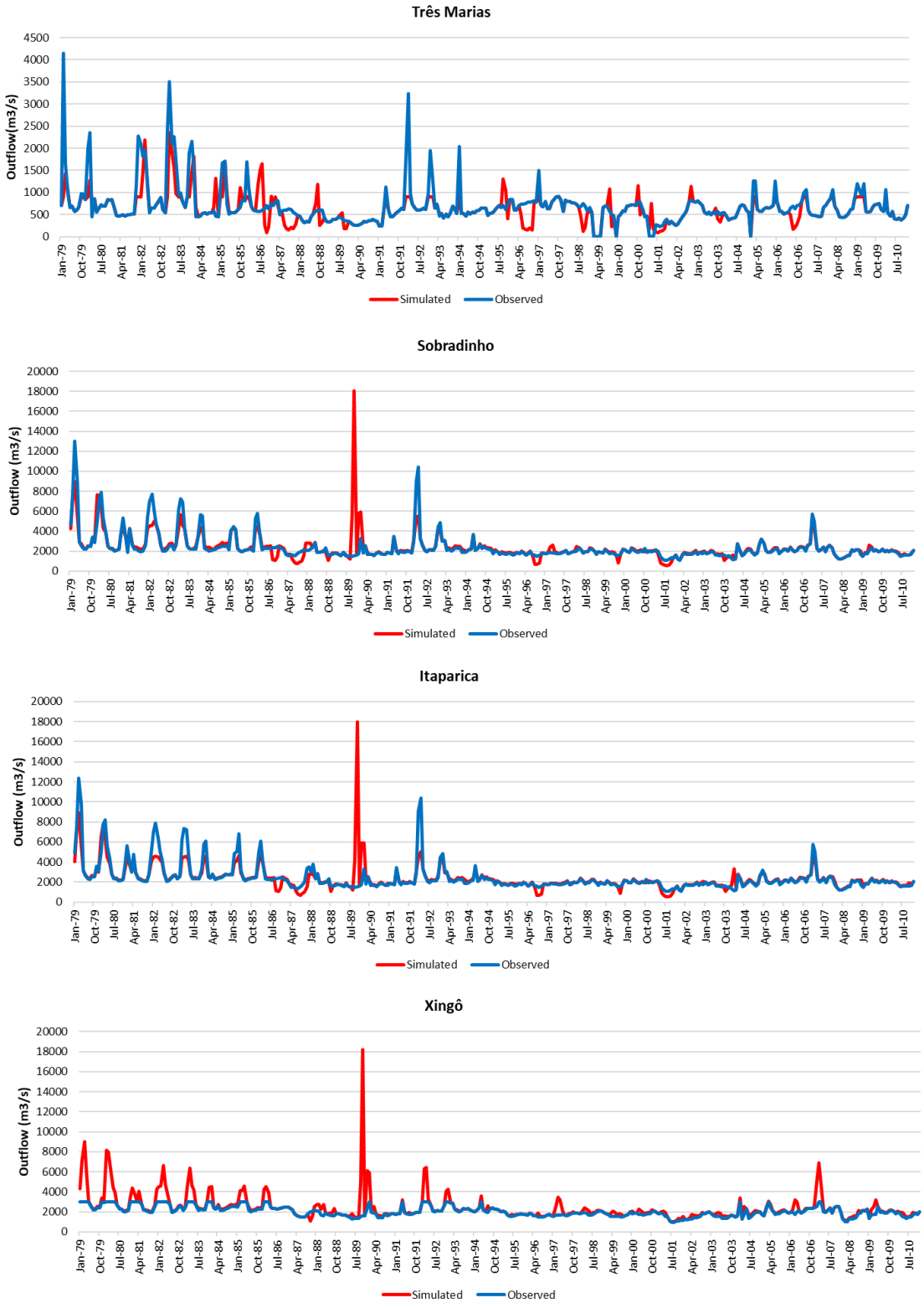
Supplementary Material:

SM S1 – Comparison of the recorded and simulated flows at various cross sections of the São Francisco River. Recorded streamflow data for the model validation the model were obtained from ANA monitoring database (HIDROWEB) and from the National Electricity System Operator (ONS).



SM S2 – Synthesis of the surface water balance (demand/ availability ratio)

	Balance situation						
	Present	A2025	B2025	C2025	A2035	B2035	C2035
Mineiro do Alto SF affluents	Confortable	Confortable	Confortable	Confortable	Confortable	Worrisome	Worrisome
Pará River	Worrisome	Worrisome	Worrisome	Worrisome	Worrisome	Worrisome	Critical
Paraopeba River	Critical	Critical	Critical	Critical	Critical	Critical	Critical
Surrounding of the Três Marias Reservoir	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Ribeirão dos Tiros	Critical	Critical	Critical	Critical	Very critical	Very critical	Very critical
Das Velhas River	Critical	Critical	Critical	Very critical	Very critical	Very critical	Very critical
Rio de Janeiro and Formoso	Critical	Critical	Very critical	Very critical	Very critical	Very critical	Very critical
Jequitaí River	Confortable	Worrisome	Worrisome	Worrisome	Worrisome	Critical	Critical
High Preto River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Paracatu River	Critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Pacuí River	Confortable	Worrisome	Worrisome	Worrisome	Worrisome	Worrisome	Worrisome
Urucuia River	Critical	Critical	Critical	Critical	Critical	Very critical	Very critical
Verde Grande River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Pandeiros, Pardo and Manga Rivers	Critical	Critical	Critical	Very critical	Critical	Very critical	Very critical
Carinhanha River	Excellent	Excellent	Excellent	Excellent	Excellent	Confortable	Confortable
Corrente River	Confortable	Worrisome	Worrisome	Worrisome	Worrisome	Worrisome	Worrisome
High Grande River	Critical	Critical	Very critical	Very critical	Critical	Very critical	Very critical
Medium and low Grande River	Confortable	Worrisome	Critical	Critical	Critical	Very critical	Very critical
Paramirim, Santo Onofre and Carnaíba de Dentro Rivers	Very critical	Critical	Critical	Critical	Critical	Critical	Critical
Verde and Jacaré Rivers	Very critical	Very critical	Very critical	Very critical	Critical	Very critical	Very critical

	Balance situation						
	Present	A2025	B2025	C2025	A2035	B2035	C2035
Left margin of Sobradinho reservoir	Very critical	Very critical	Very critical	Very critical	Critical	Critical	Very critical
Salitre River	Very critical	Very critical	Very critical	Very critical	Critical	Critical	Very critical
Pontal River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Garças River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Curaçá River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Brígida River	Very critical	Critical	Critical	Critical	Critical	Very critical	Very critical
Terra Nova River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Macururé River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Pajeú River	Very critical	Critical	Critical	Critical	Critical	Critical	Critical
Moxotó River	Critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Curituba River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Seco/Talhado Stream	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
High Ipanema River	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Low Ipanema and low SF	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical
Low São Francisco in Sergipe	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical	Very critical

SM S3 – Synthesis of the surface water balance (ACQUANET) – domestic urban and rural supply (remaining sub-basins)

Sub-basin	Balance situation						
	Current	A2025	B2025	C2025	A2035	B2035	C2035
Mineiro do Alto SF affluents	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pará River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Paraopeba River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Ribeirão dos Tiros	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Das Velhas River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Rio de Janeiro and Formoso	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Jequitaí River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
High Preto River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Paracatu River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pacuí River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Urucuia River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pandeiros, Pardo and Manga Rivers	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Carinhanha River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Corrente River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
High Grande River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Medium and low Grande River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Sub-basin	Balance situation						
	Current	A2025	B2025	C2025	A2035	B2035	C2035
Salitre River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Brígida River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Terra Nova River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Macururé River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pajeú River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Moxotó River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Curituba River	Critical	Critical	Critical	Critical	Critical	Critical	Critical
Seco/Talhado Stream	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Low São Francisco in Sergipe	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

SM S4 – Synthesis of the surface water balance (ACQUANET) – industry (remaining sub-basins)

Sub-basin	Balance situation						
	Current	A2025	B2025	C2025	A2035	B2035	C2035
Mineiro do Alto SF affluents	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pará River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Paraopeba River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Ribeirão dos Tiros	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Das Velhas River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Rio de Janeiro and Formoso	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Jequitaí River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
High Preto River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Paracatu River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pacuí River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Urucuia River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pandeiros, Pardo and Manga Rivers	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Carinhanha River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Corrente River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
High Grande River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Medium and low Grande River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Salitre River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Brígida River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Sub-basin	Balance situation						
	Current	A2025	B2025	C2025	A2035	B2035	C2035
Terra Nova River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Macururé River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pajeú River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Moxotó River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Curituba River	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical
Seco/Talhado Stream	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Low São Francisco in Sergipe	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

SM S5 – Synthesis of the surface water balance (ACQUANET) – farming (remaining sub-basins)

Sub-basin	Balance situation						
	Current	A2025	B2025	C2025	A2035	B2035	C2035
Mineiro do Alto SF affluents	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pará River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Paraopeba River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Critical
Ribeirão dos Tiros	Excellent	Excellent	Confortable	Confortable	Confortable	Confortable	Confortable
Das Velhas River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Rio de Janeiro and Formoso	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Jequitaí River	Excellent	Confortable	Confortable	Confortable	Confortable	Confortable	Worrisome
High Preto River	Critical	Excellent	Excellent	Confortable	Confortable	Confortable	Confortable
Paracatu River	Excellent	Excellent	Confortable	Confortable	Confortable	Confortable	Confortable
Pacuí River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Urucuia River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pandeiros, Pardo and Manga Rivers	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Carinhanha River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Corrente River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
High Grande River	Excellent	Excellent	Excellent	Confortable	Excellent	Excellent	Confortable
Medium and low Grande River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Sub-basin	Balance situation						
	Current	A2025	B2025	C2025	A2035	B2035	C2035
Salitre River	Critical	Excellent	Confortable	Worrisome	Excellent	Excellent	Excellent
Brígida River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Critical
Terra Nova River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Very Critical
Macururé River	Very Critical	Critical	Very Critical	Worrisome	Confortable	Critical	Critical
Pajeú River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Very Critical
Moxotó River	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Very Critical
Curituba River	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical
Seco/Talhado Stream	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Low São Francisco in Sergipe	Worrisome	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical	Very Critical

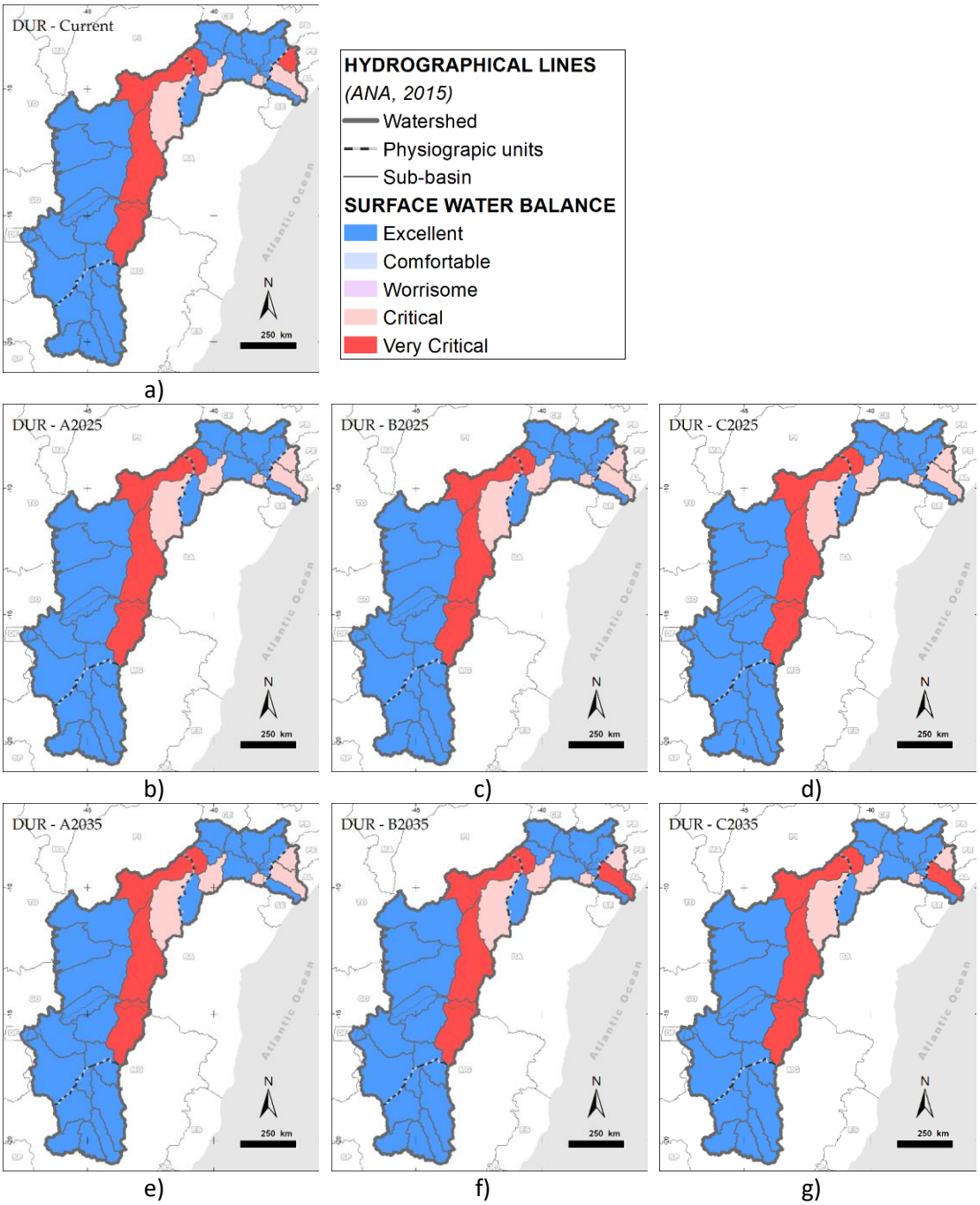
SM S6 – Renewable groundwater reserve values, per aquifer system, resulting from the harmonization of the groundwater balance, obtained from the current state of hydrologic knowledge of aquifers and from the integrated analysis of surface and groundwater flow

Type	Aquifer	Area (km^2)	Pmed (mm)	Recharge rate	Recharge (m^3/year)	Recharge (m^3/s)	Exploitable reserves (m^3/s)*
Karst	Marancó complex, carbonate unit	13	586	10.0%	762775	0.0242	0,005
	Santa Filomena complex, carbonate unit	02	603	10.0%	13374	0.0004	0,0001
	Barra Bonita formation, carbonate unit	40	622	10.0%	2481057	0.0787	0,016
	Caatinga formation	6030.8	672	10.0%	415600813	13.1786	2,636
	Gandarela formation	74	1390	10.0%	10174779	0.3226	0,065
	Olhos D'água formation	10	586	10.0%	585350	0.0186	0,004
	Salitre formation	14950.9	692	10.0%	1024552124	32.4883	6,498
	Santana formation	788	675	10.0%	50846017	1.6123	0,322
	Bambuí group, carbonate unit	30426	1170	10.0%	3316942597	105.1796	21,036
	Estância group, carbonate unit	853	630	15.0%	79323996	2.5153	0,503
Granular	Alluvial deposit	18283.4	943	23.5%	4045838163	128.2927	25,659
	Wind deposit	8703	722	15.0%	902273461	28.6109	5,722
	Coastal deposit	536	1004	20.0%	107231678	3.4003	0,680
	Alliance formation	1358	723	3.0%	30039981	0.9526	0,191
	Barreiras formation	2104	1017	25.0%	519337692	16.4681	3,294
	Brejo Santo formation	90	667	5.0%	2998051	0.0951	0,019
	Cabeças formation	232	691	3.0%	4807729	0.1525	0,030
	Candeias formation	280	682	10.0%	19573425	0.6207	0,124
	Candeias Formation/ Indiscriminate Islands Group	1084	772	10.0%	88264923	2.7989	0,560
	Curituba formation	59	827	1.0%	413113	0.0131	0,003
	Formação Exu formation	2796	753	30%	54279959	1.7212	0,344

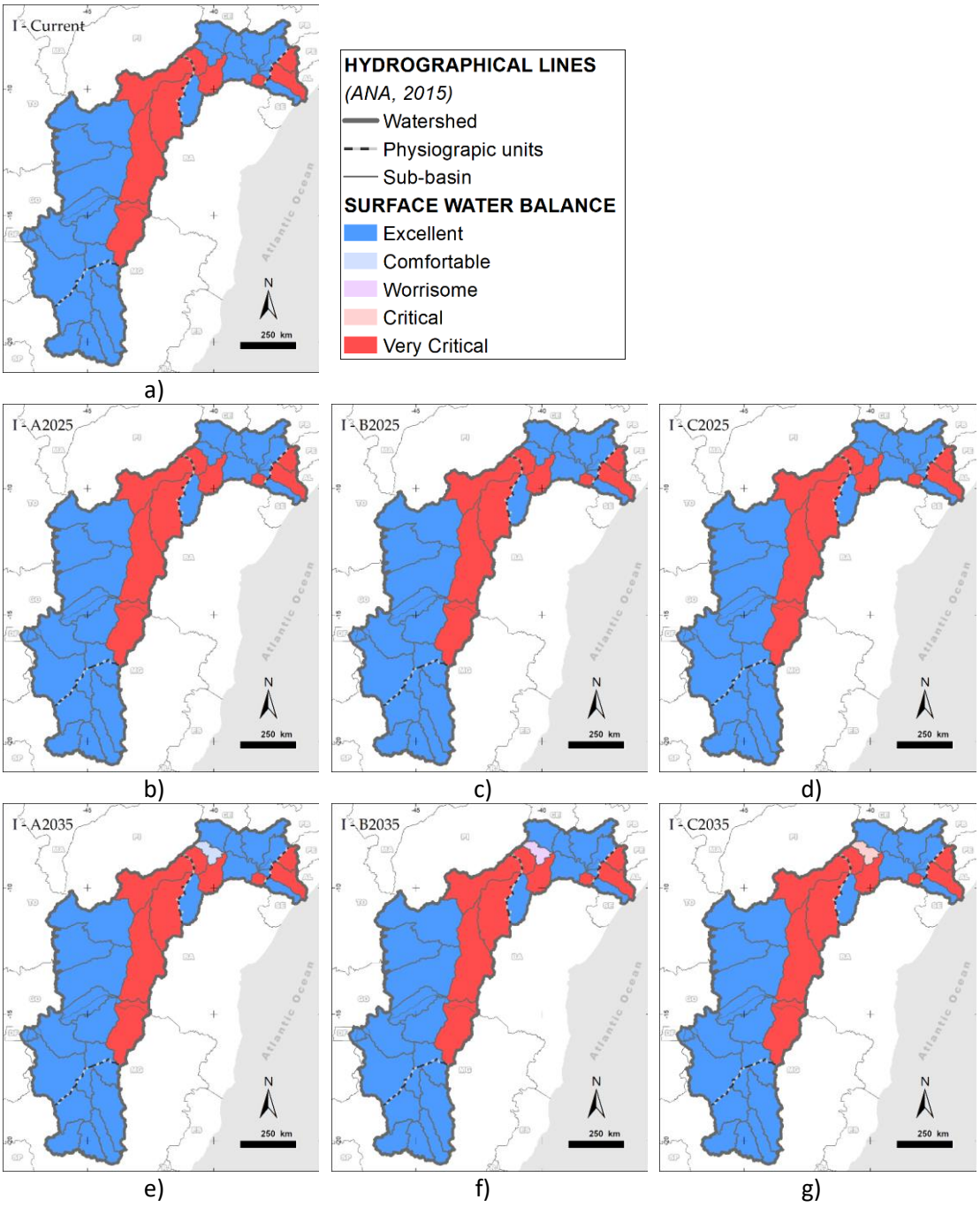
Type	Aquifer	Area (km^2)	Pmed (mm)	Recharge rate	Recharge (m^3/year)	Recharge (m^3/s)	Exploitable reserves (m^3/s)*
	Inajá formation	707	741	10.0%	55,335,405	1.7547	0,351
	Marizal formation	57,042	662	10.0%	367,100,493	11.6407	2,328
	Mauriti formation	832	713	5.0%	33,807,892	1.0720	0,214
	Missão Velha formation	8.6	849	5.0%	367,326	0.0116	0,002
	Penedo formation	126	1,030	10.0%	13,060,090	0.4141	0,083
	Pimenteiras formation	198	691	1.0%	1,370,044	0.0434	0,009
	Riachuelo formation	18	1,069	10.0%	1,950,814	0.0619	0,012
	Santa Brígida formation	311	707	1.0%	2,197,019	0.0697	0,014
	São Sebastião formation	355	733	15.0%	44,809,239	1.4209	0,284
	Sergi formation	111	693	1.0%	773,384	0.0245	0,005
	Serraria formation	57	971	10.0%	5,742,482	0.1821	0,036
	Tacaratu formation	2,998	755	15.0%	346,861,903	10.9989	2,200
	Brotas group	6	707	1.0%	41,540	0.0013	0,0003
	Coruripe group	268	1,004	10.0%	27,103,415	0.8594	0,172
	Igreja Nova Group - Perucaba Indiscriminate	230	971	10.0%	22,112,657	0.7012	0,140
	Areado group	12,702	1,313	20.0%	3,469,706,742	110.0237	22,005
	Ilhas group	114	678	10.0%	7,659,669	0.2429	0,049
	Serra Grande group	63.7	691	12.0%	5,281,186	0.1675	0,033
	Urucuia group	101,766	1137	20.0%	23,362,578,332	740.8225	148,164
Fractured	Undifferentiated Fractured Basement	256,114	873	4.5%	9,919,415,924	314.5426	62,909
	Bambuí group, land unit	16,0254	1,130	4.5%	8,998,559,696	285.3425	57,068
	Mata do Corda group	3,693	1,354	4.5%	227,046,137	7.1996	1,440
	Paranoá group, land unit	872	1,410	4.5%	55,021,688	1.7447	0,349
Total		636.218,4			**57,644,244,131**	**1827.9**	365.6

Note: * 20% of the renewable reserves.

SM S7 – Water balance for domestic urban and rural supply (DUR) in São Francisco River Basin – State divides, physiographic regions, sub-basins considered in the São Francisco River Basin Ten-year Plan (2004 - 2013), current situation and future scenarios/year: a) - Current, b) – A2025, c) – B2025, d) – C2025, e) – A2035, f) – B20235, g) – C2035.



SM S8 – Water balance for industry (I) in São Francisco River Basin – State divides, physiographic regions, sub-basins considered in the São Francisco River Basin Ten-year Plan (2004 - 2013), current situation and future scenarios/year: a) - Current, b) – A2025, c) – B2025, d) – C2025, e) – A2035, f) – B20235, g) – C2035.



SM S9 – Water balance for farming (F, mainly irrigation) in São Francisco River Basin – State divides, physiographic regions, sub-basins considered in the São Francisco River Basin Ten-year Plan (2004 - 2013), current situation and future scenarios/year: a) - Current, b) – A2025, c) – B2025, d) – C2025, e) – A2035, f) – B20235, g) – C2035.

