

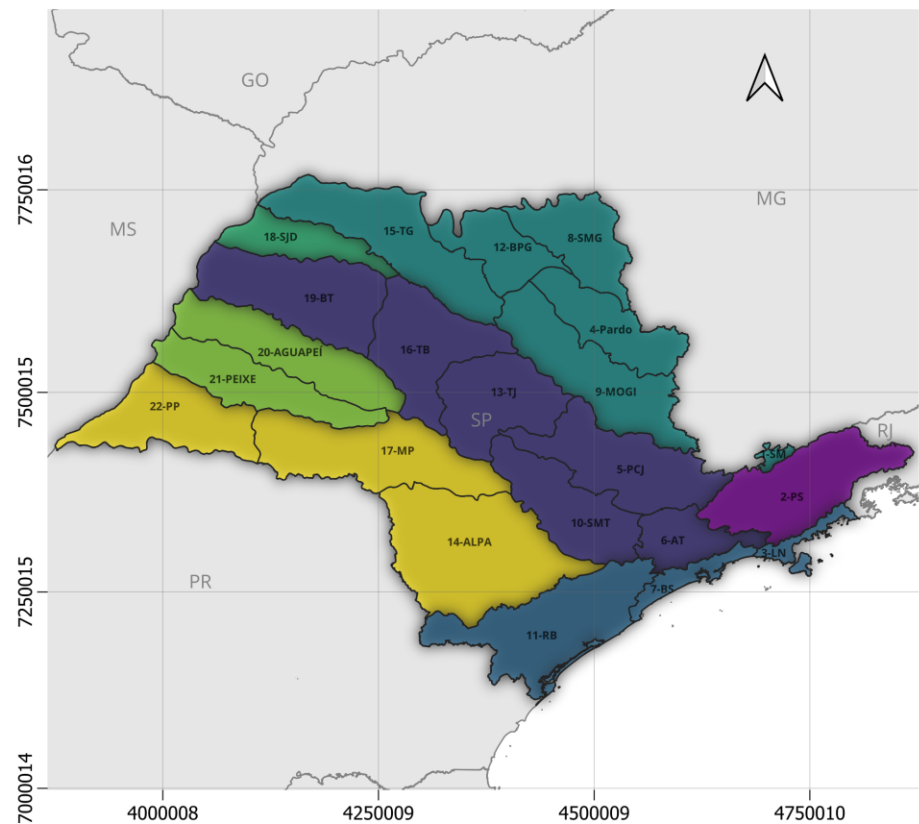


Balanço das chuvas no Estado de São Paulo
Índice de Precipitação Padronizado (SPI)
Magnitude da Seca (DM)



Referência: Setembro de 2025

UNIDADES DE GERENCIAMENTO DE RECURSOS HÍDRICOS
AGRUPADAS POR REGIÃO HIDROGRÁFICA



Legenda

Regiões Hidrográficas

- Bacia do Rio Paraíba do Sul
- Bacia do Rio Tietê
- Vertente Litorânea
- Vertente Paulista do Rio Grande
- Vertente Paulista do Rio Grande/São José dos Dourados
- Aguapeí/Peixe
- Vertente Paulista do Rio Paranapanema

Unidade de Gerenciamento de Recursos Hídricos

- Limite UGRHI

Contexto espacial

Estado inserido em 3 Regiões

Hidrográficas Brasileiras: Rio Paraná;
Atlântico Sudeste e Atlântico Sul

- 7 Regiões Hidrográficas Estaduais (vertentes);
- 22 Unidades de Gerenciamento de Recursos Hídricos (UGRHI);
- 9 Regiões Metropolitanas;
- 645 municípios;
- 45,1 milhões de habitantes

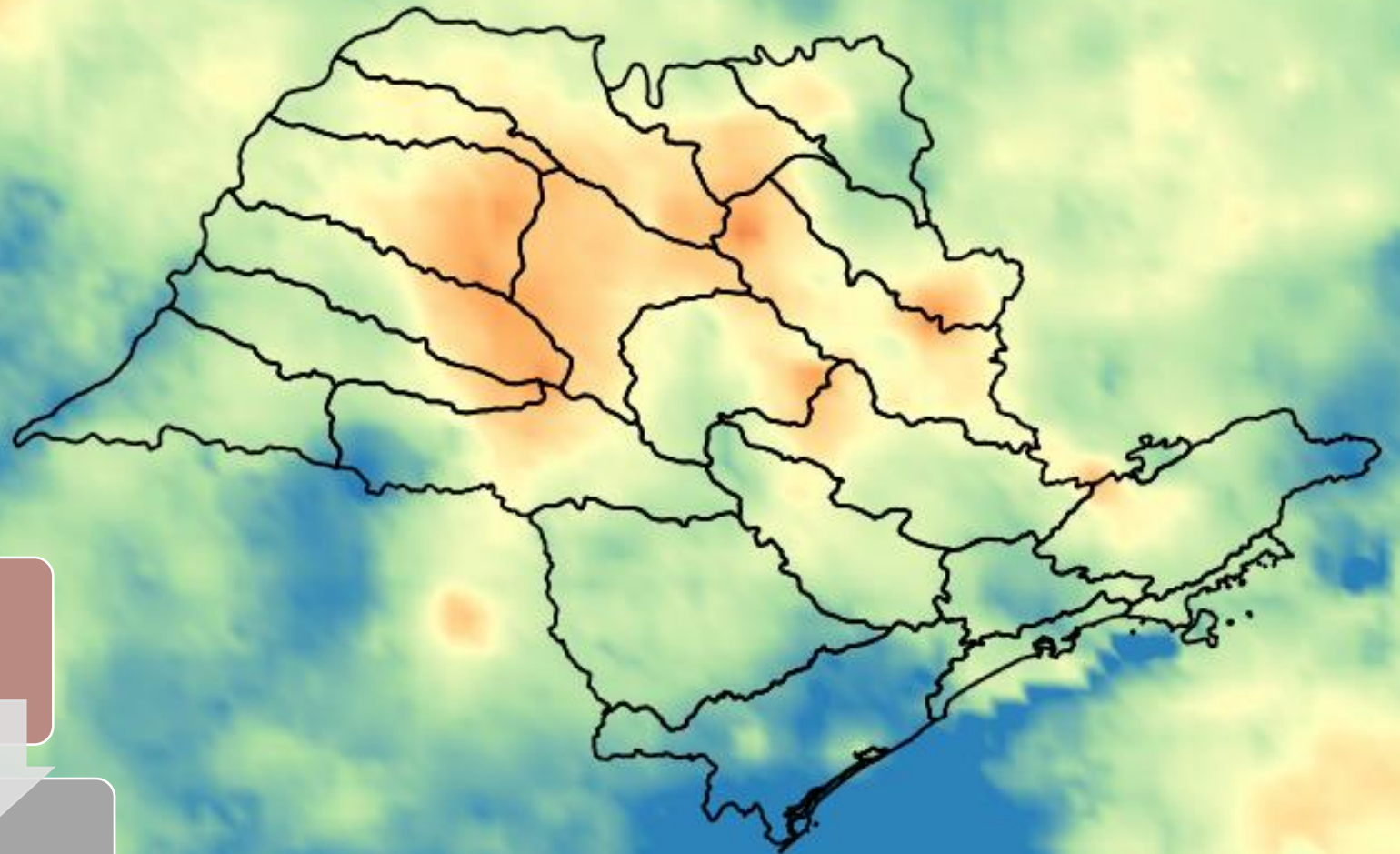
Metodologia

Coleta dados da chuva diária raster (Merge/INPE): combinação da precipitação observada (pluviômetros) com estimativa de precipitação por satélite.

Processamento com uma biblioteca para dados geoespaciais (GDAL)

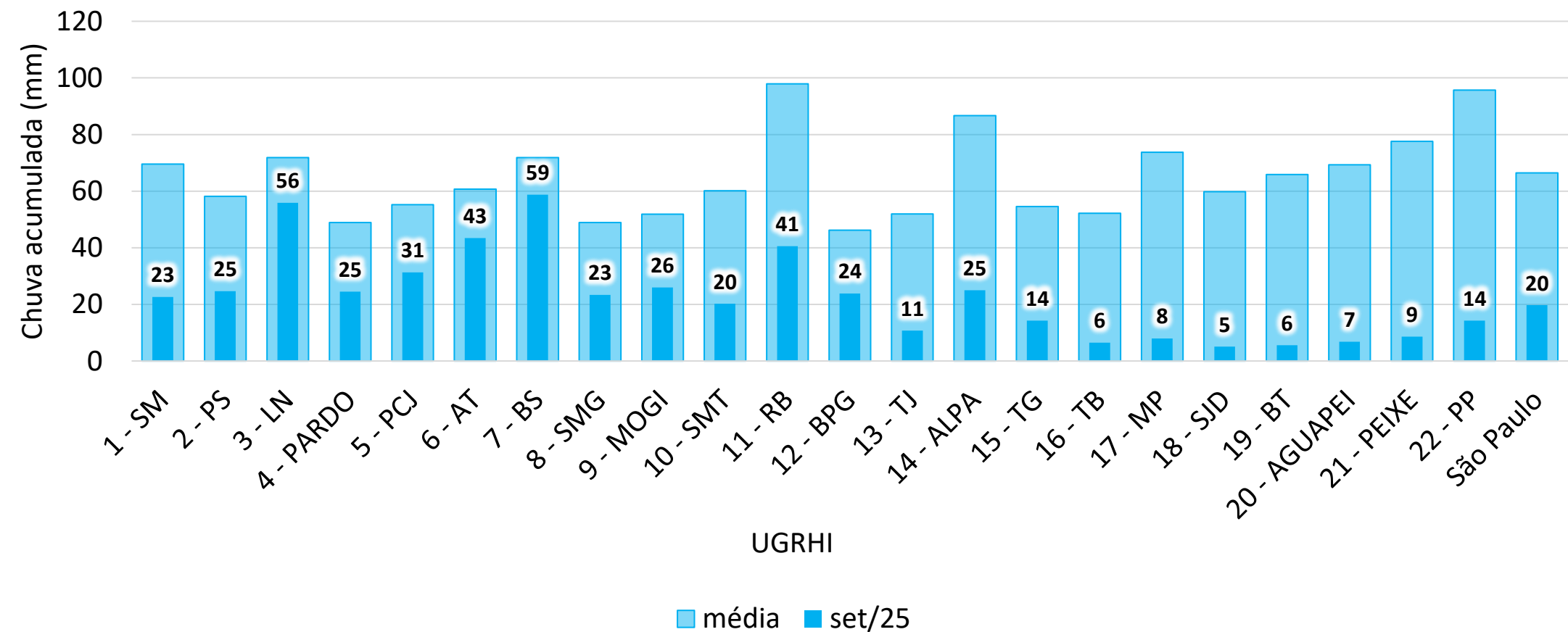
Obtenção da chuva diária e mensal na área da UGRHI

Cálculo de indicadores (SPI e DM)



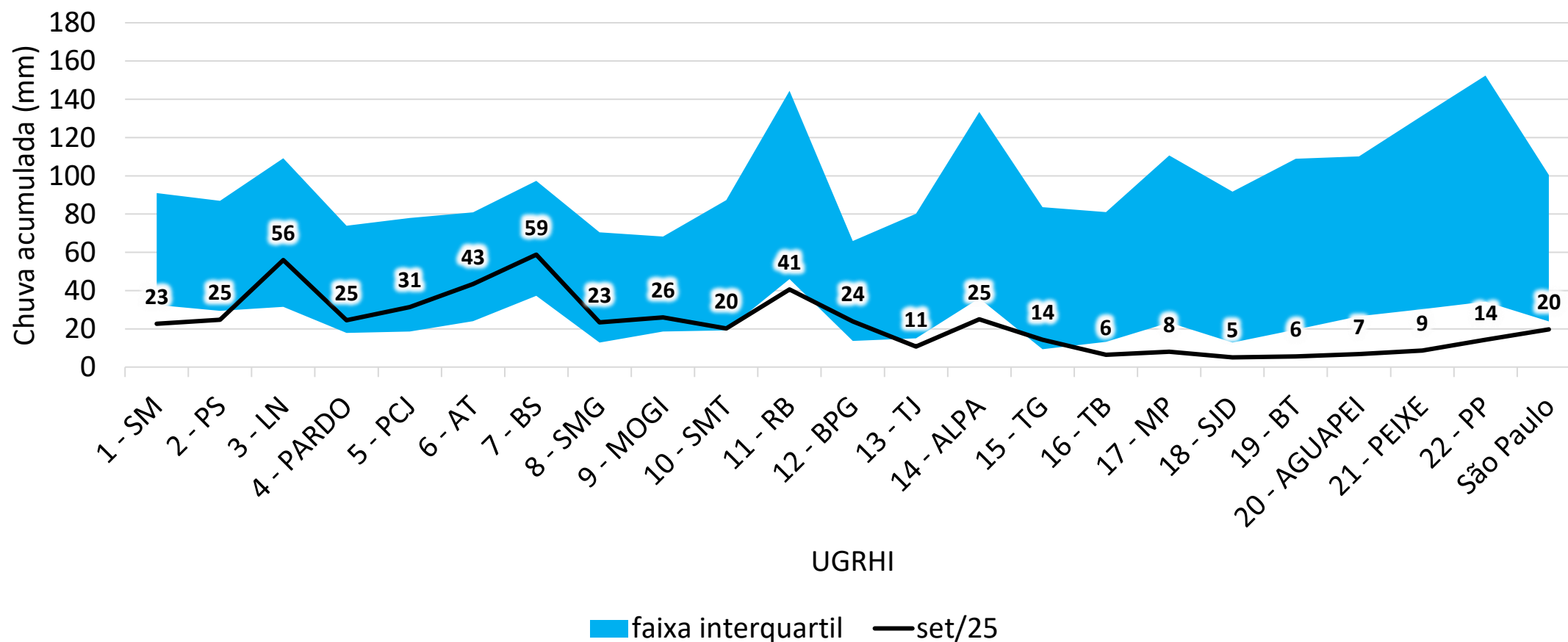
Resumo dos acumulados de chuva no estado de São Paulo

Chuva por UGRHI em Setembro de 2025



Análise de dispersão – intervalo interquartil

- Precipitação pluviométrica acumulada do mês de análise comparada com o intervalo interquartil, calculado a partir da série histórica de dados do produto MERGE/Inpe;
- Faixa interquartil: valores entre o primeiro quartil (25%) e o terceiro quartil (75%).

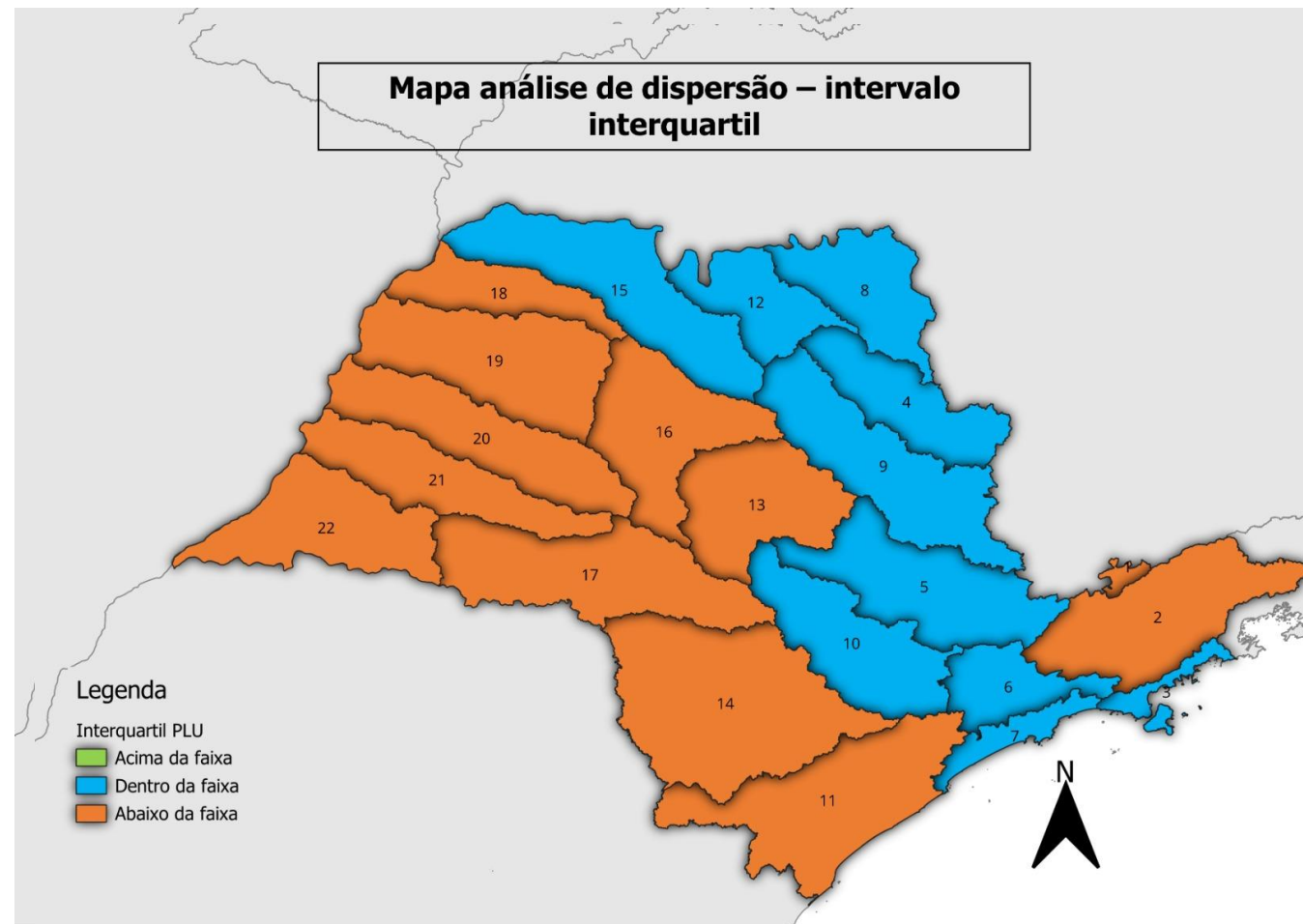


Análise de dispersão – intervalo interquartil

- Mapa construído a partir da análise de quartis aplicada na série de dados de chuva de cada UGRHI.

Critérios:

- **Acima da faixa:** valor de chuva acumulada acima do terceiro quartil (75%)
- **Dentro da faixa:** valor de chuva dentro da faixa interquartil, ou seja, entre o primeiro quartil (25%) e o terceiro quartil (75%)
- **Abaixo da faixa:** valor de chuva acumulada abaixo do primeiro quartil (25%)

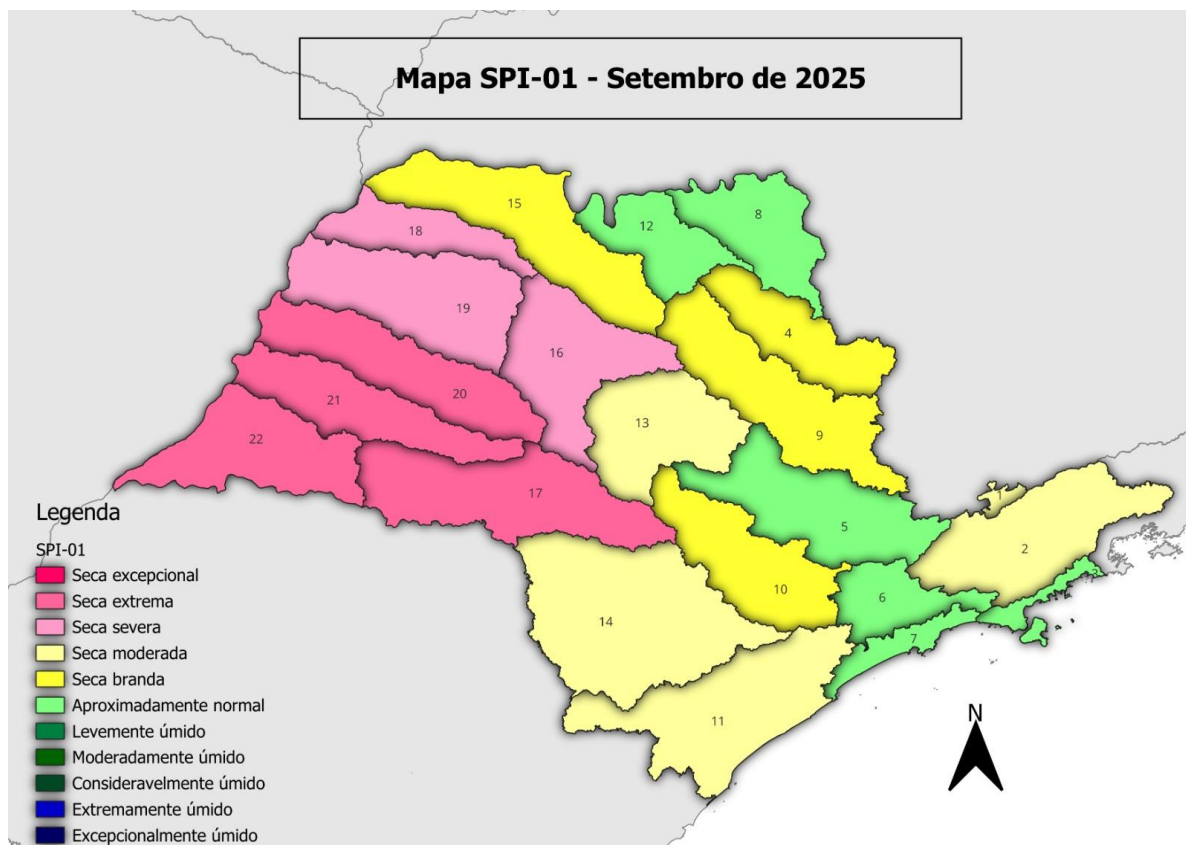


Resumo do Índice de Precipitação Padronizado no estado de São Paulo

Índice de Precipitação Padronizado

O Índice Padronizado de Precipitação (Standardized Precipitation Index - SPI) é uma ferramenta consistente de detecção e monitoramento probabilístico/padronizado de déficit ou excesso de precipitação para diferentes escalas temporais, possibilitando a comparação entre regiões com diferentes características climáticas. O índice é negativo para condições de déficit hídrico, nas quais a precipitação é inferior à média histórica (climatológica), e positivo para condições de excesso hídrico, que indicam precipitação superior à média histórica.

Sendo assim, o conhecimento do SPI pode fornecer informações importantes para a tomada de decisões quanto às medidas necessárias ao combate e a mitigação dos efeitos associados às secas e as enchentes.



Outros indicadores e ano hidrológico



DM (Drought Magnitude): a magnitude da seca é a soma positiva do SPI para todos os meses dentro de um evento de seca, ou seja, meses consecutivos com $SPI < -0,524$.



Semestre úmido: Outubro a Março

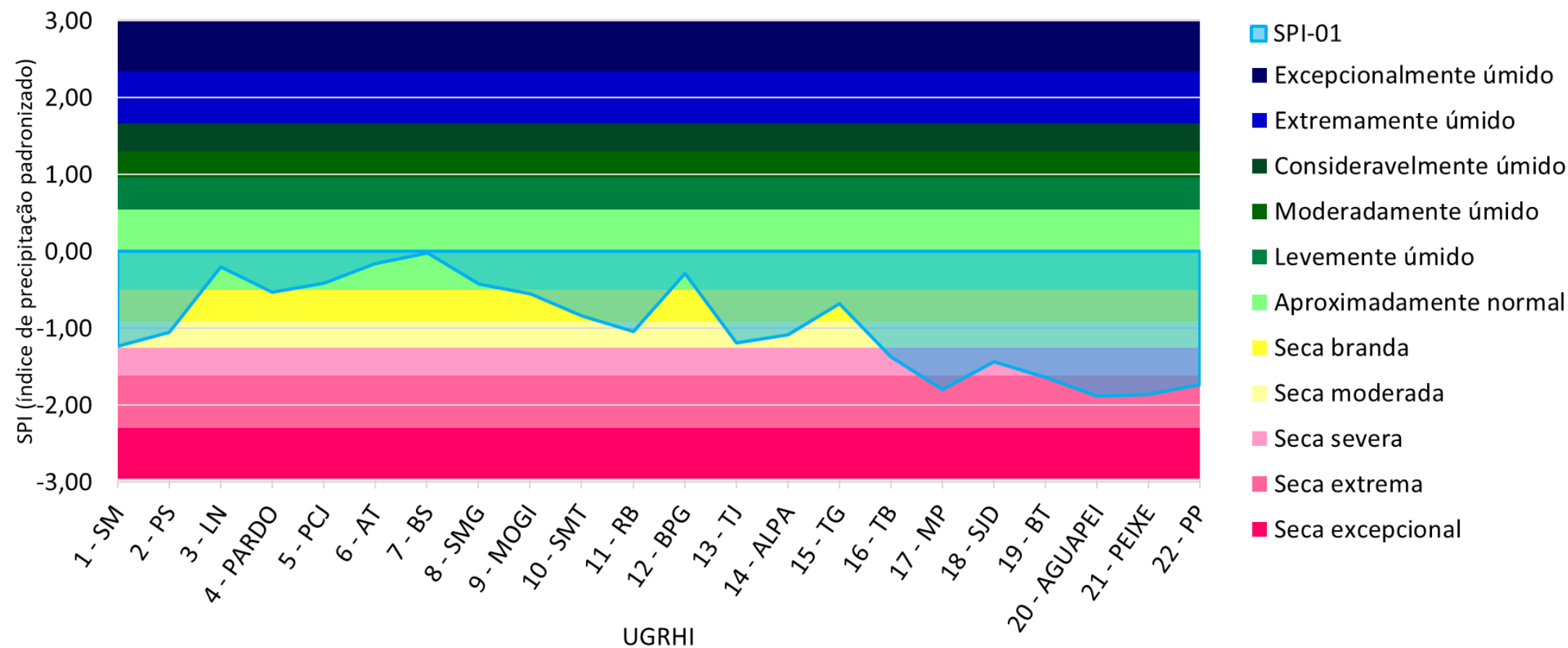


Semestre seco: Abril a Setembro

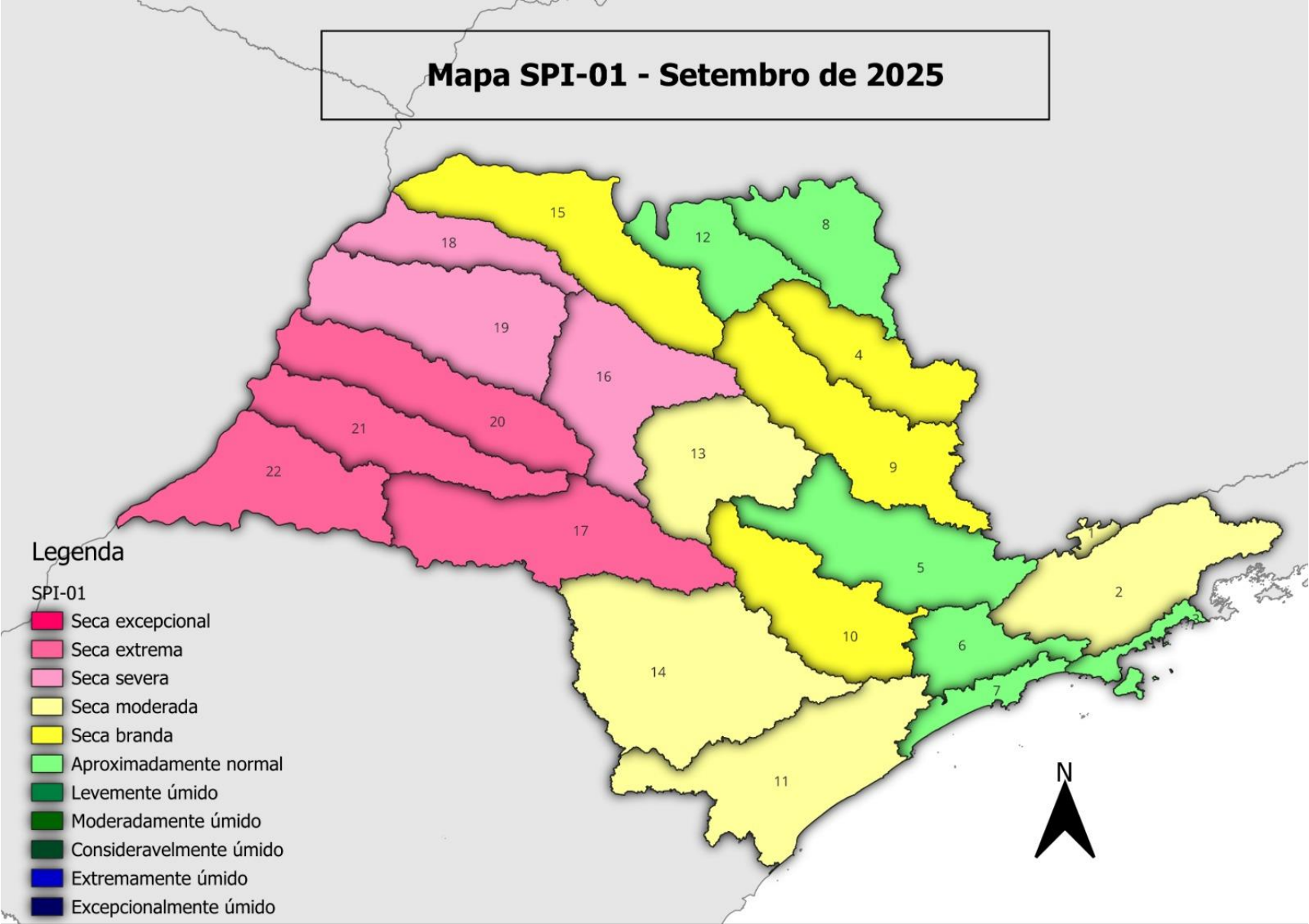
Classificação SPI

Valores	Condição	Probabilidade
$SPI \leq -2.326$	Seca excepcional	1,0%
$-2.326 < SPI \leq -1.645$	Seca extrema	4,0%
$-1.645 < SPI \leq -1.282$	Seca severa	5,0%
$-1.282 < SPI \leq -0.935$	Seca moderada	7,5%
$-0.935 < SPI \leq -0.524$	Seca branda	12,5%
$-0.524 < SPI < +0.524$	Aproximadamente normal	40,0%
$+0.524 \leq SPI < +0.935$	Levemente úmido	12,5%
$+0.935 \leq SPI < +1.282$	Moderadamente úmido	7,5%
$+1.282 \leq SPI < +1.645$	Consideravelmente úmido	5,0%
$+1.645 \leq SPI < +2.326$	Extremamente úmido	4,0%
$SPI \geq +2.326$	Excepcionalmente úmido	1,0%

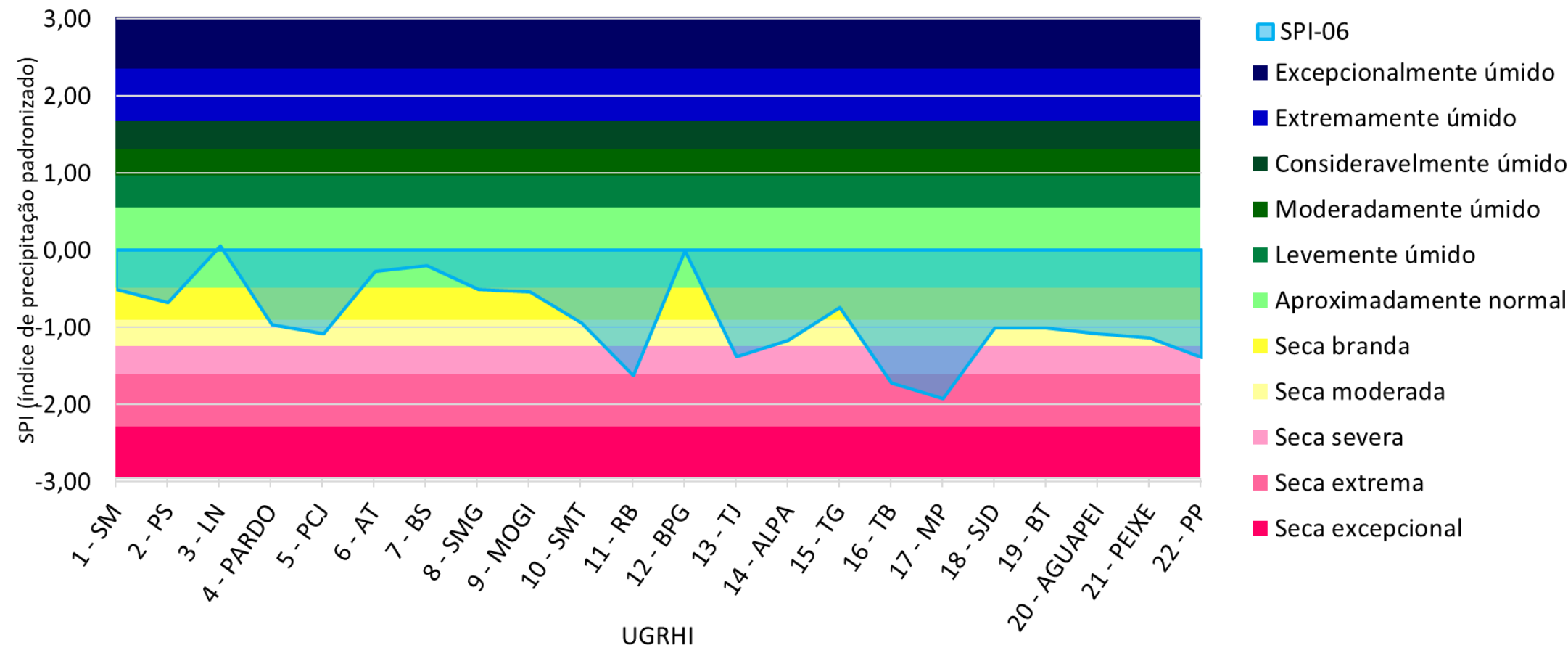
SPI-01 em Setembro de 2025



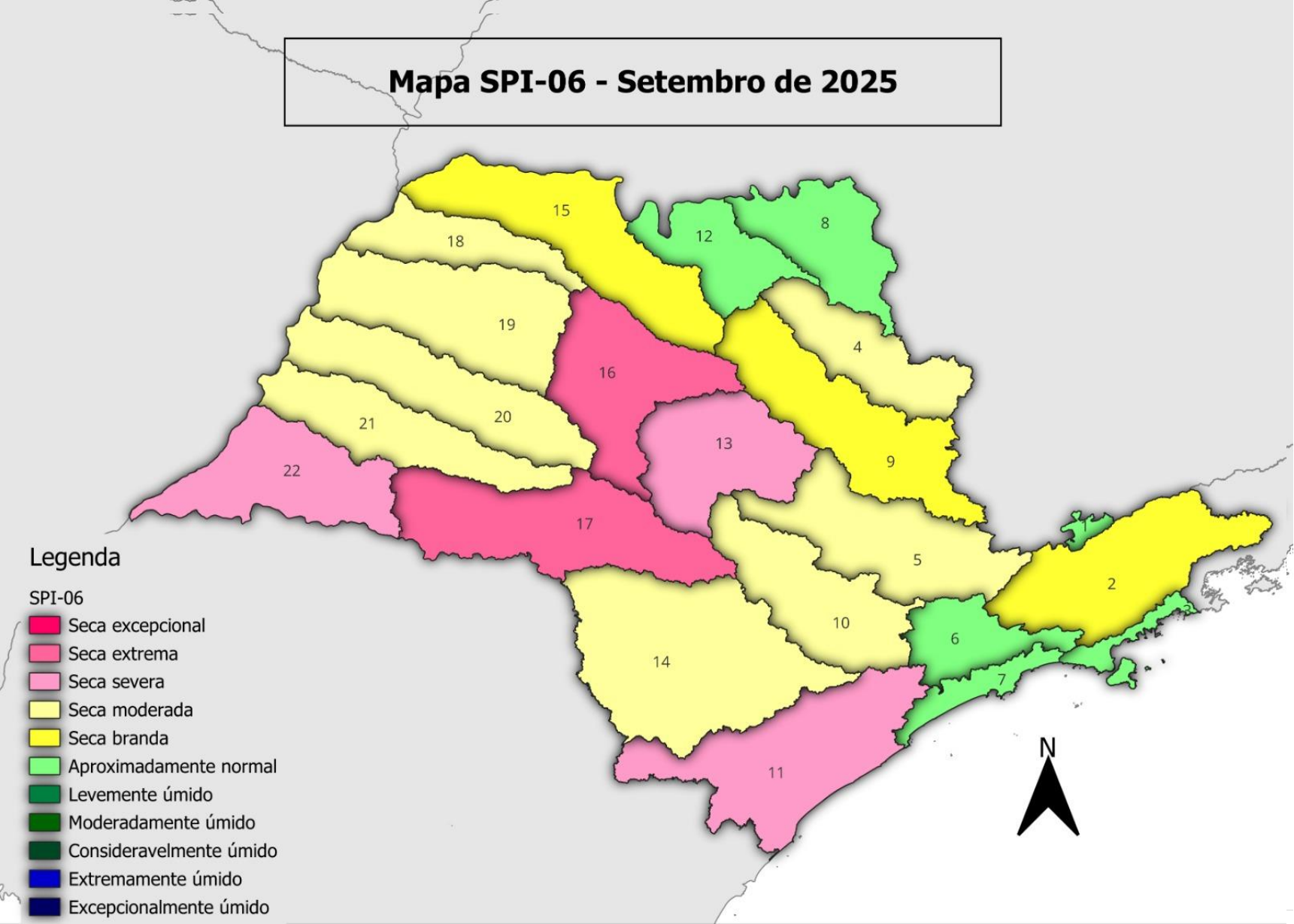
SPI-01 se baseia na análise dos dados de precipitação do mês de Setembro de 2025



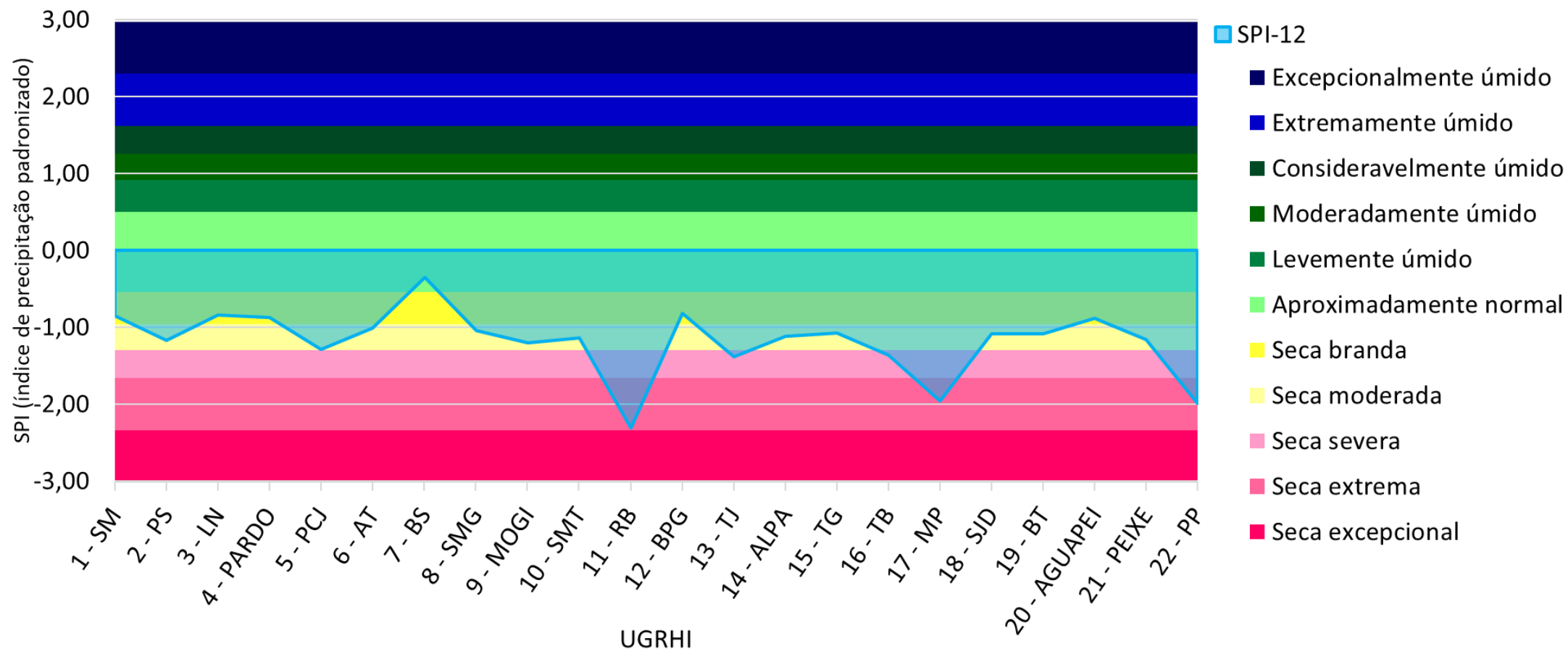
SPI-06 em Setembro de 2025



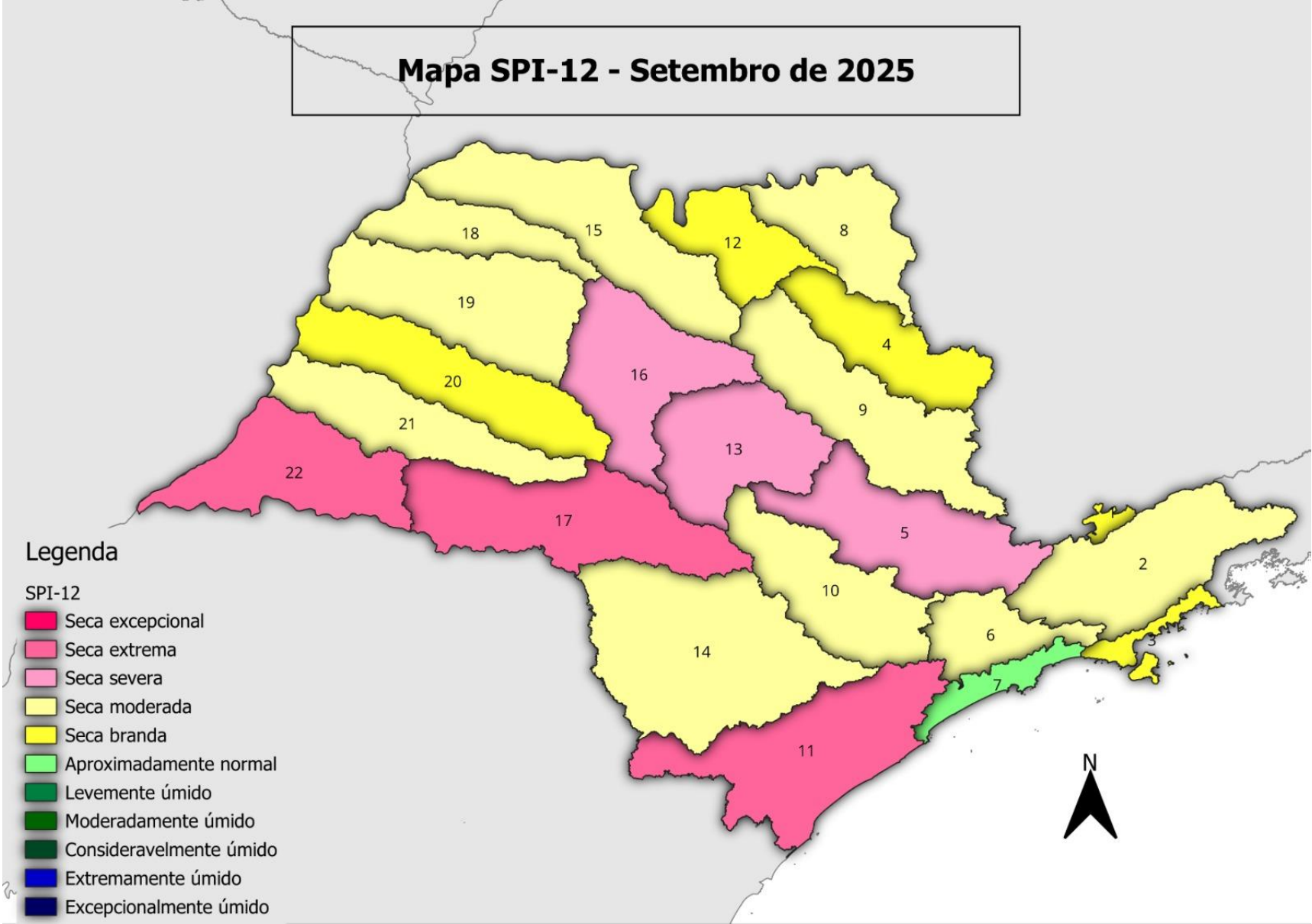
SPI-06 se baseia na análise dos dados de precipitação dos últimos 06 meses.



SPI-12 em Setembro de 2025

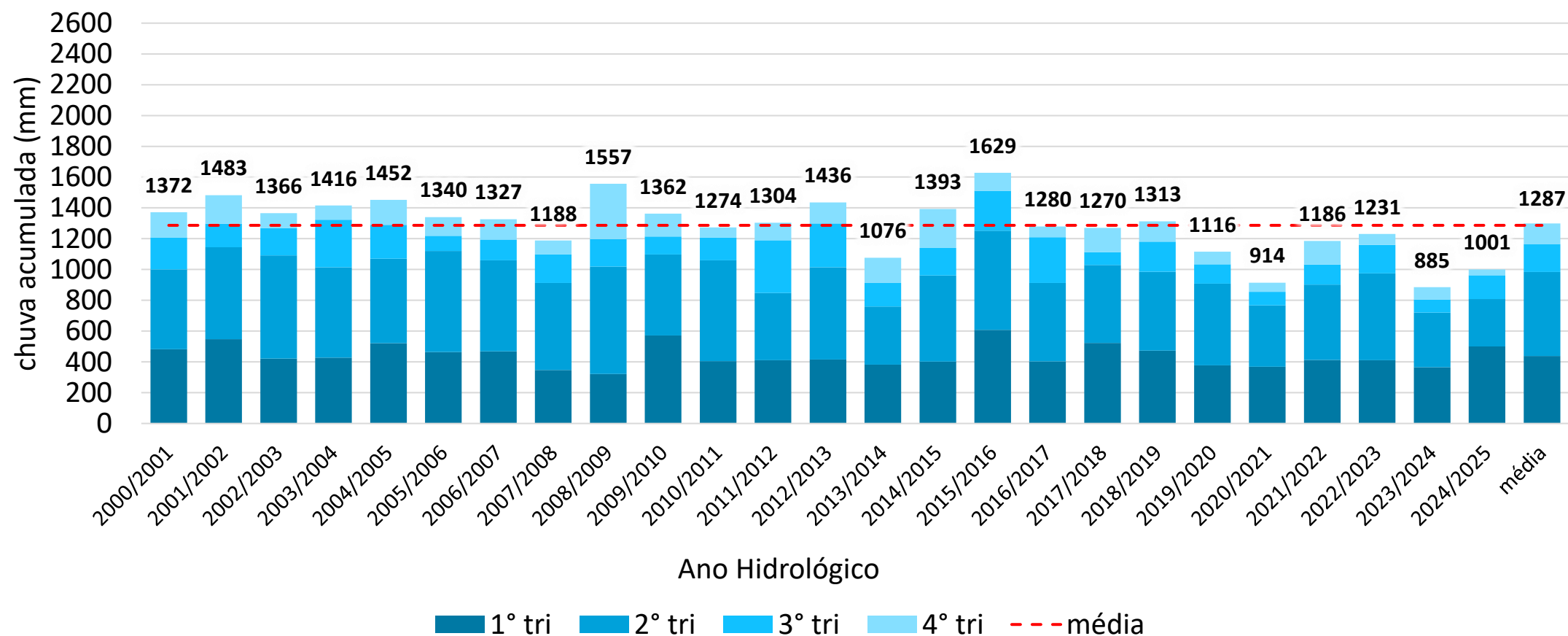


SPI-12 se baseia na análise dos dados de precipitação dos últimos 12 meses (escala anual).

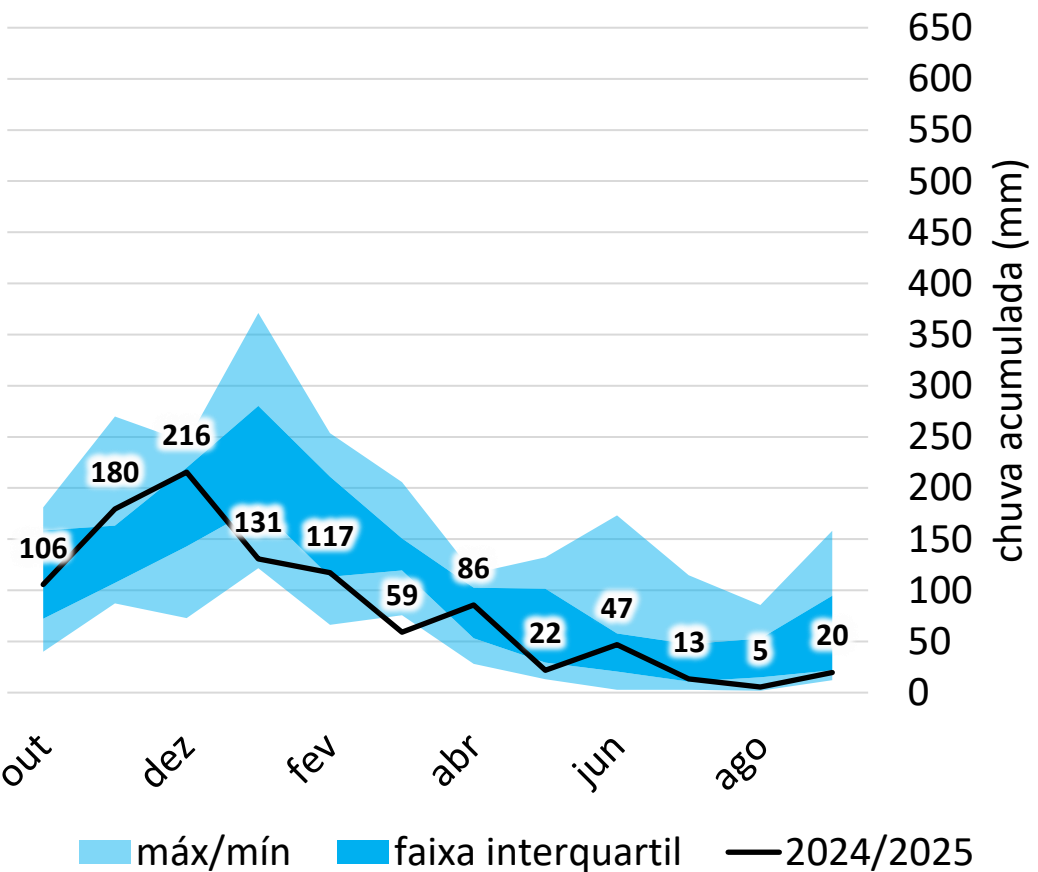
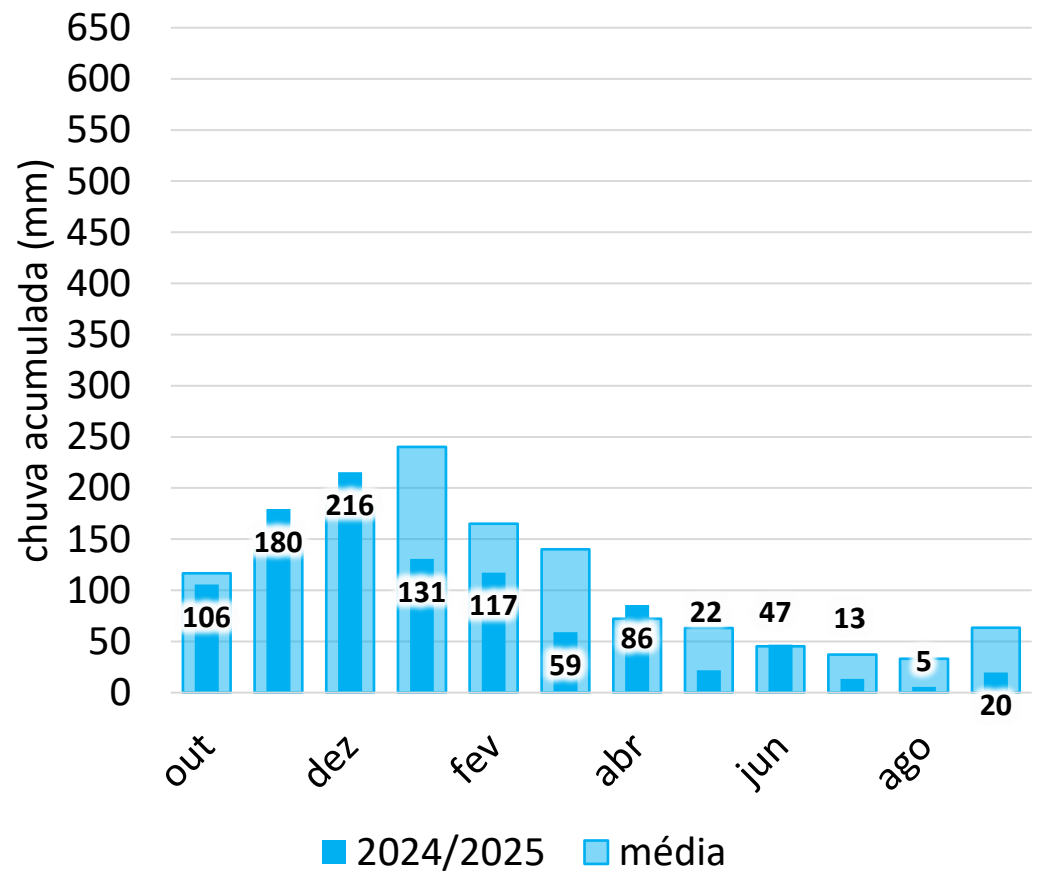


Resumo dos acumulados de chuva por UGRHI

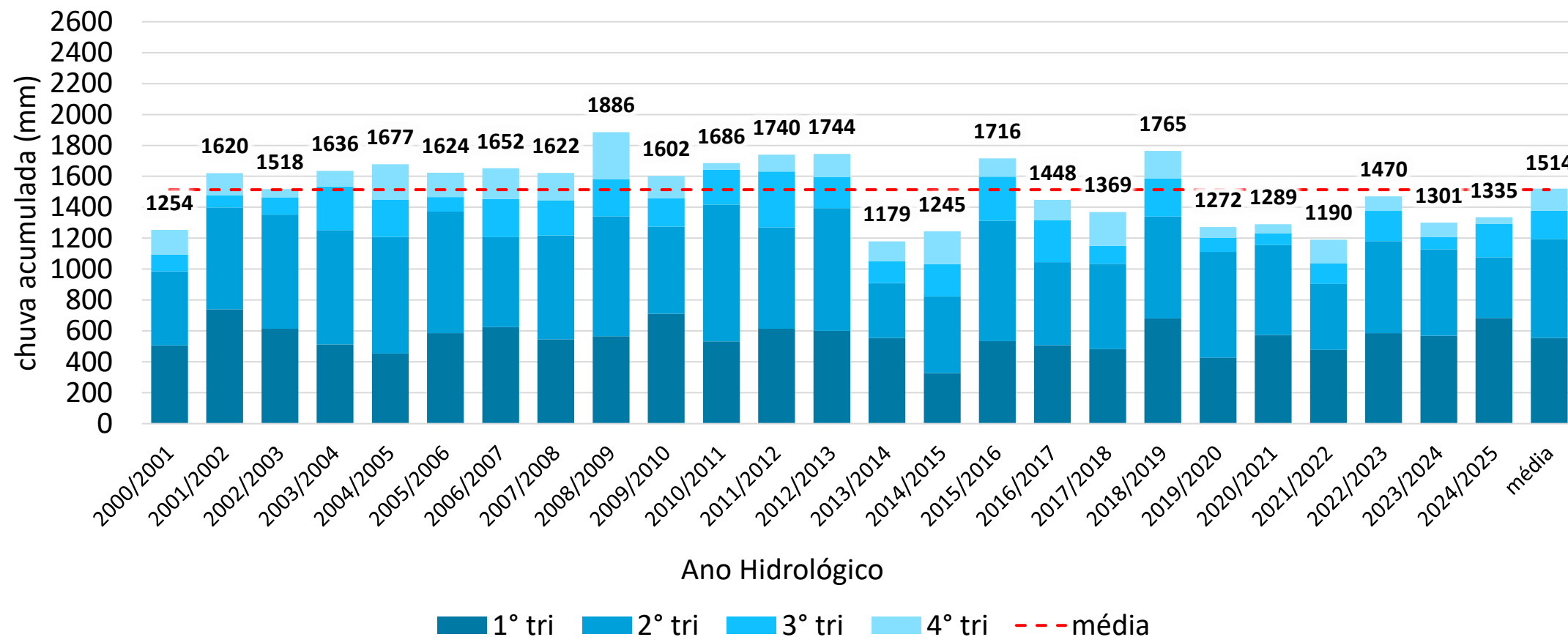
Estado de São Paulo



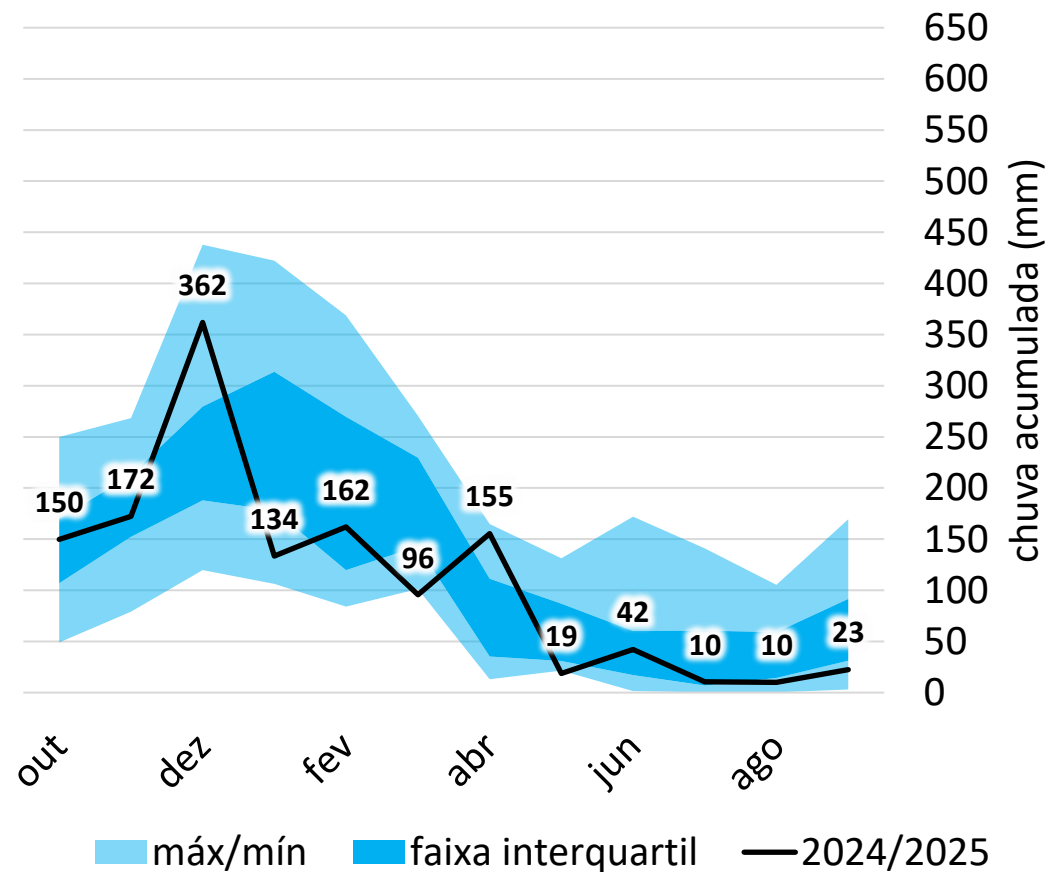
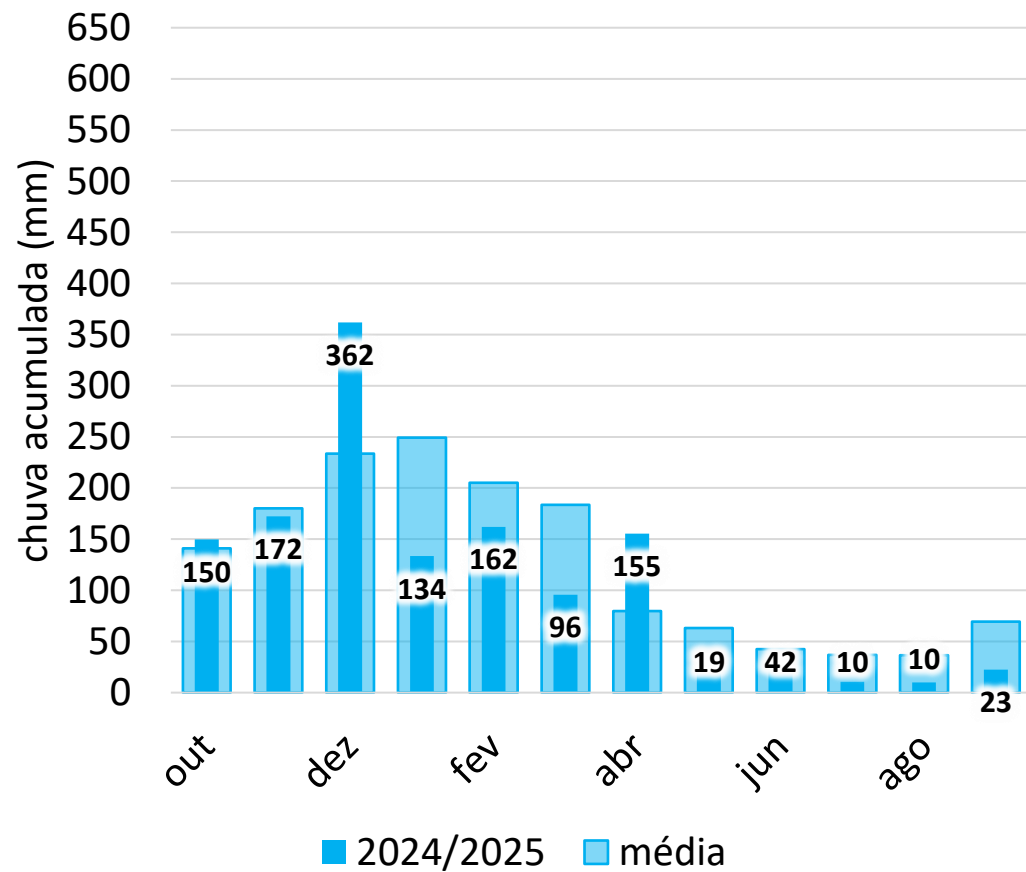
Estado de São Paulo



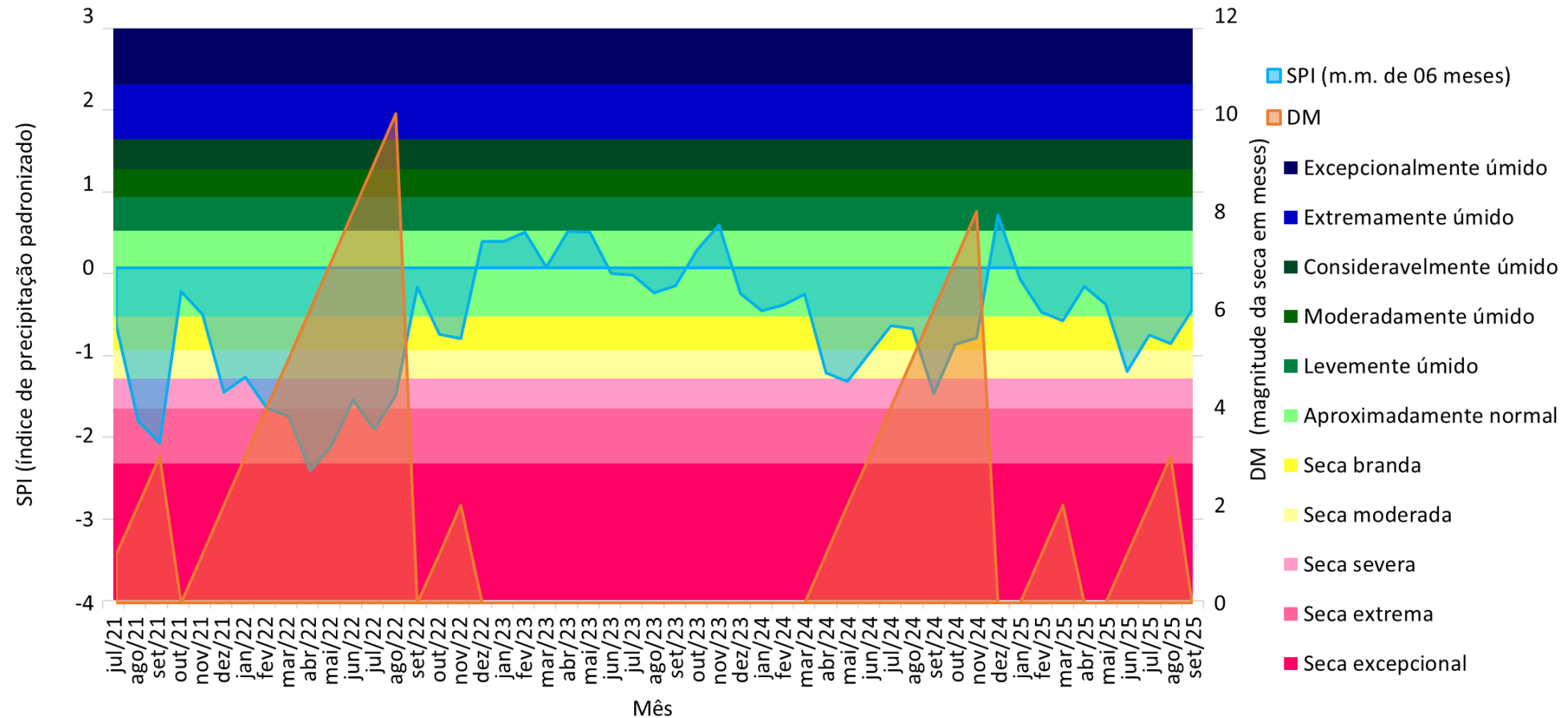
UGRHI 1 - Mantiqueira



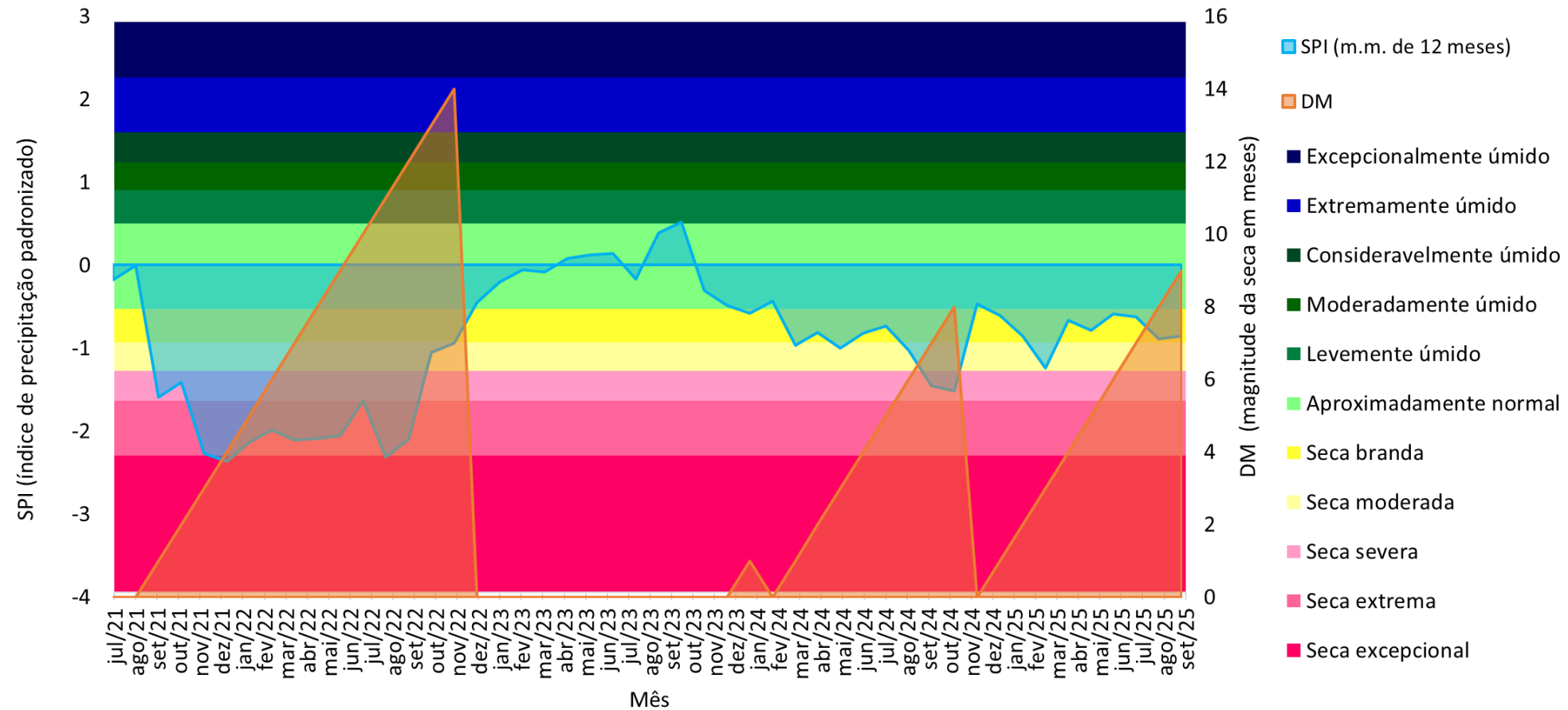
UGRHI 1 - Mantiqueira



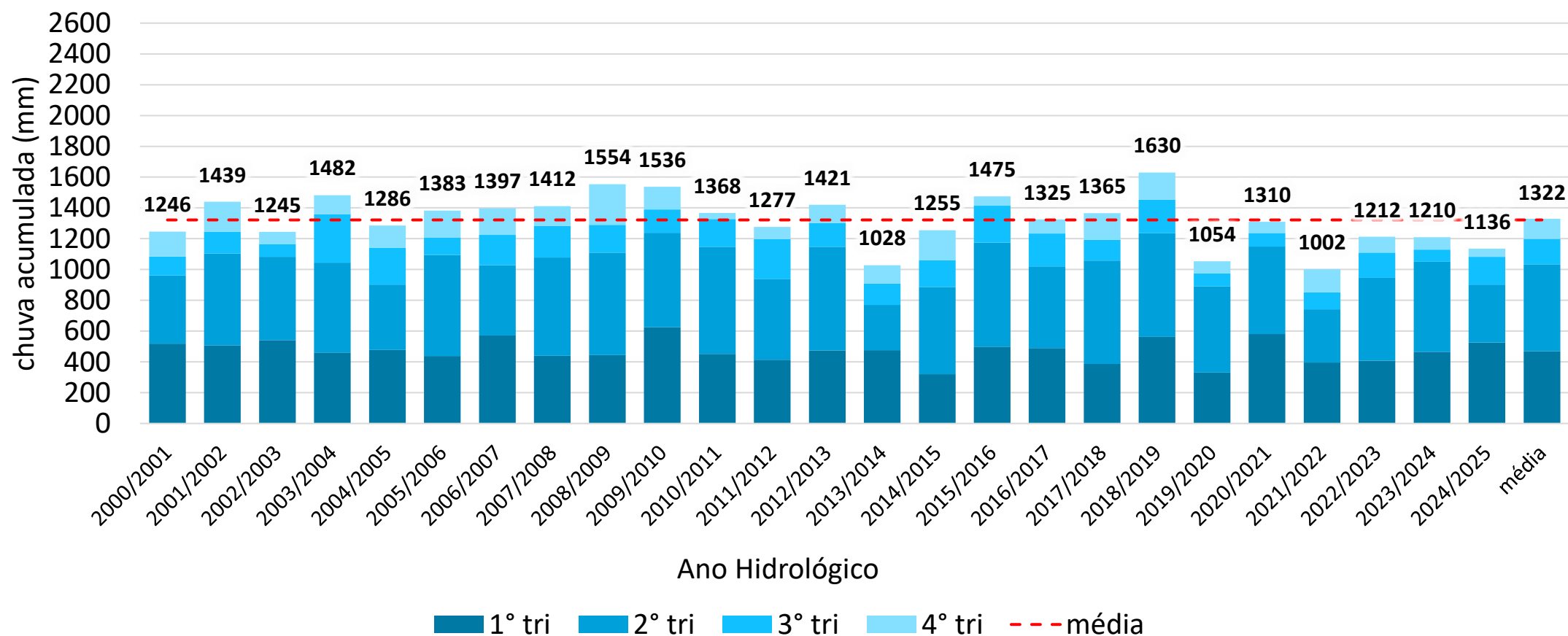
UGRHI 1 – Mantiqueira | SPI-06



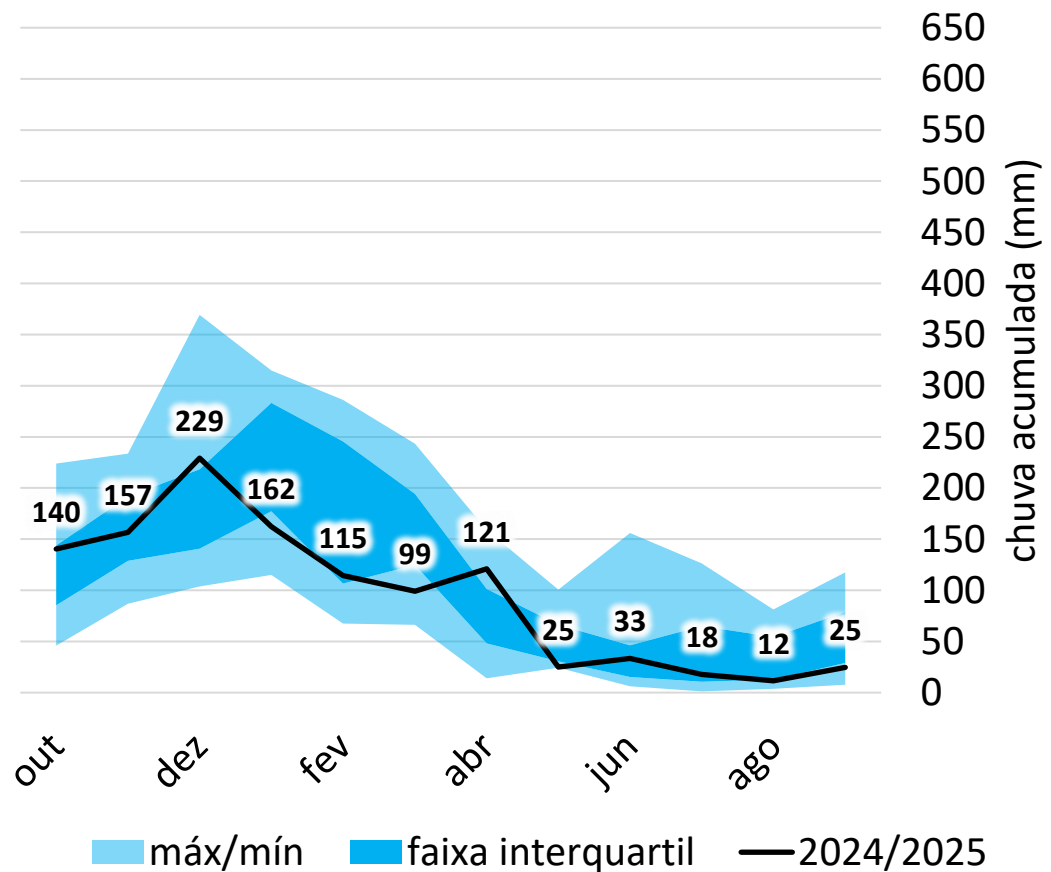
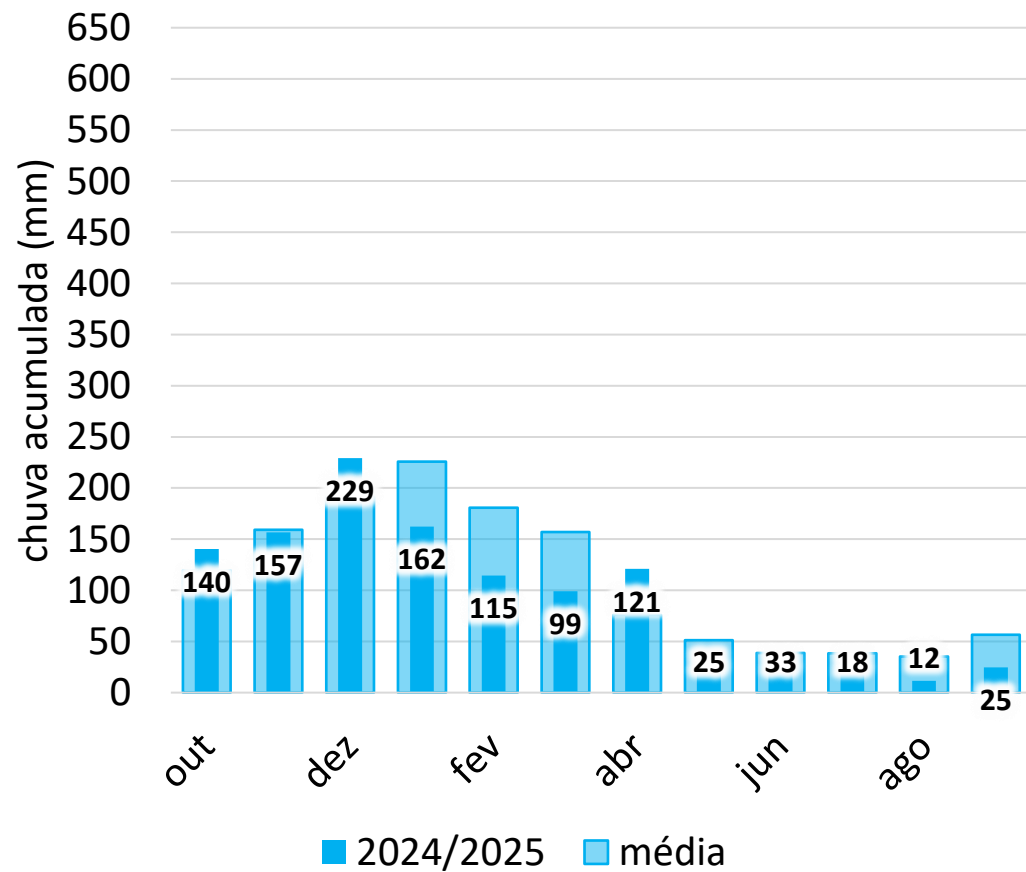
UGRHI 1 – Mantiqueira | SPI-12



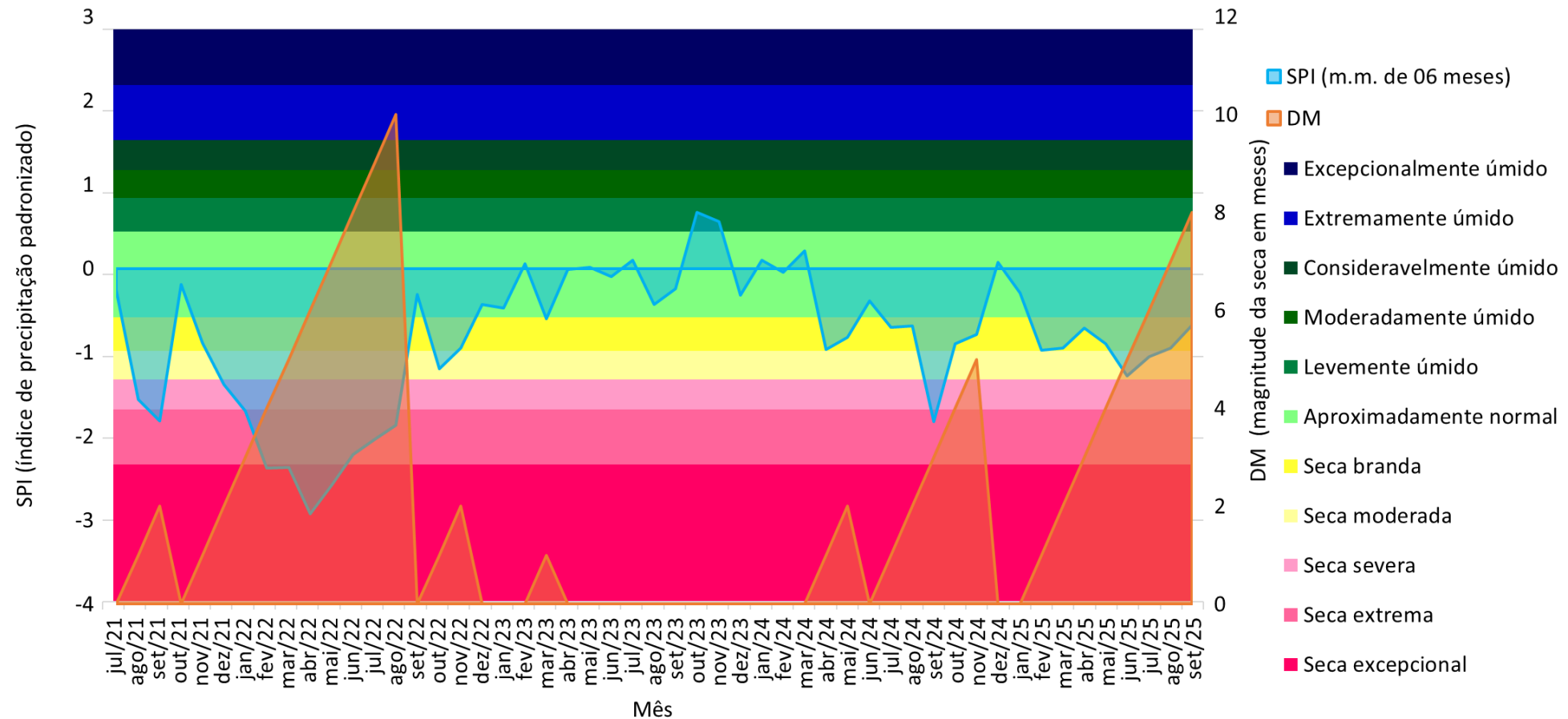
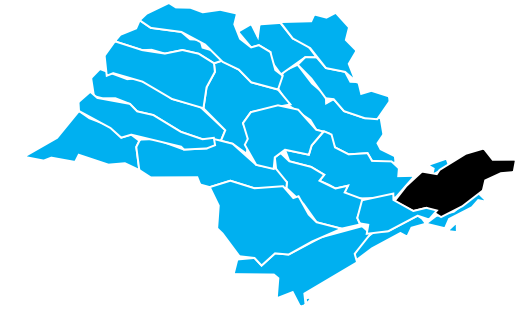
UGRHI 2 - Paraíba do Sul



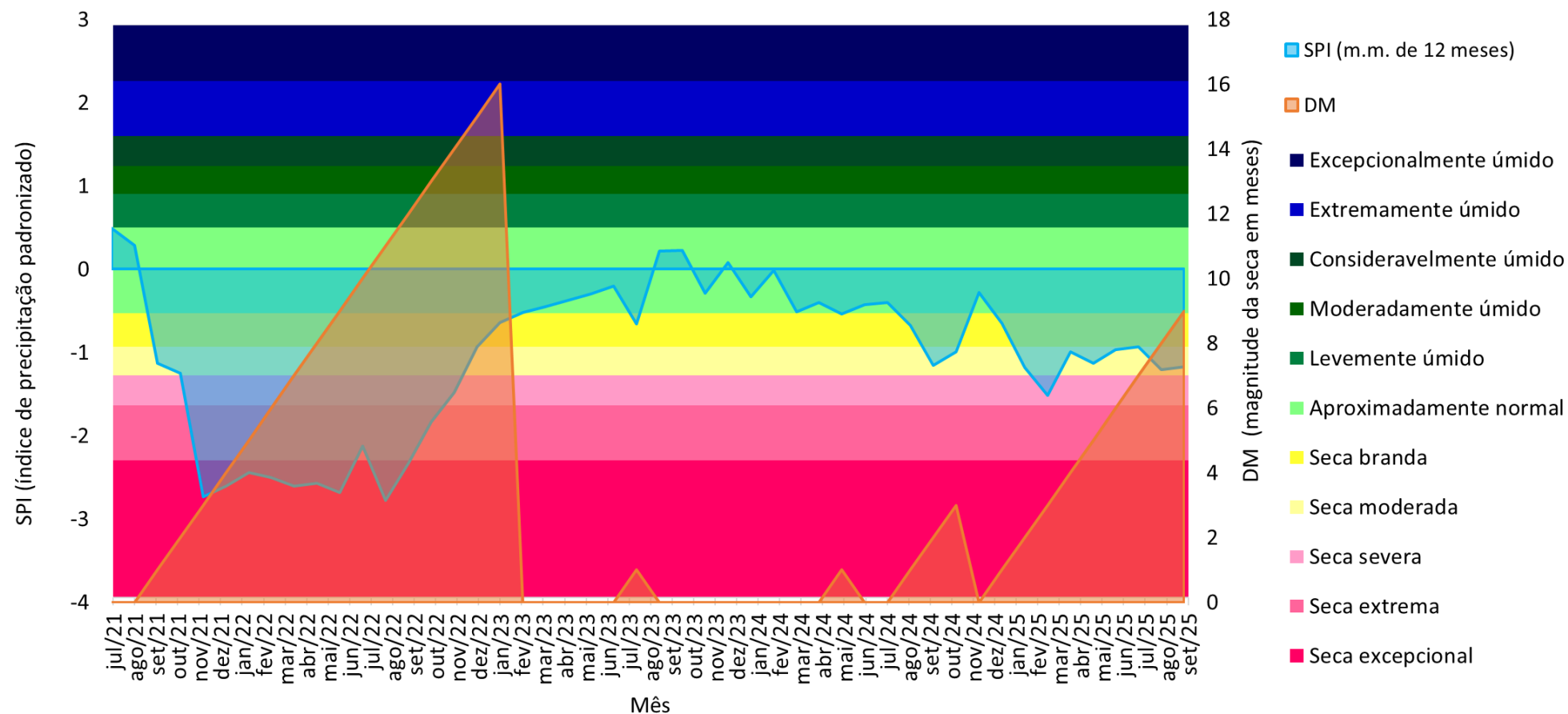
UGRHI 2 - Paraíba do Sul



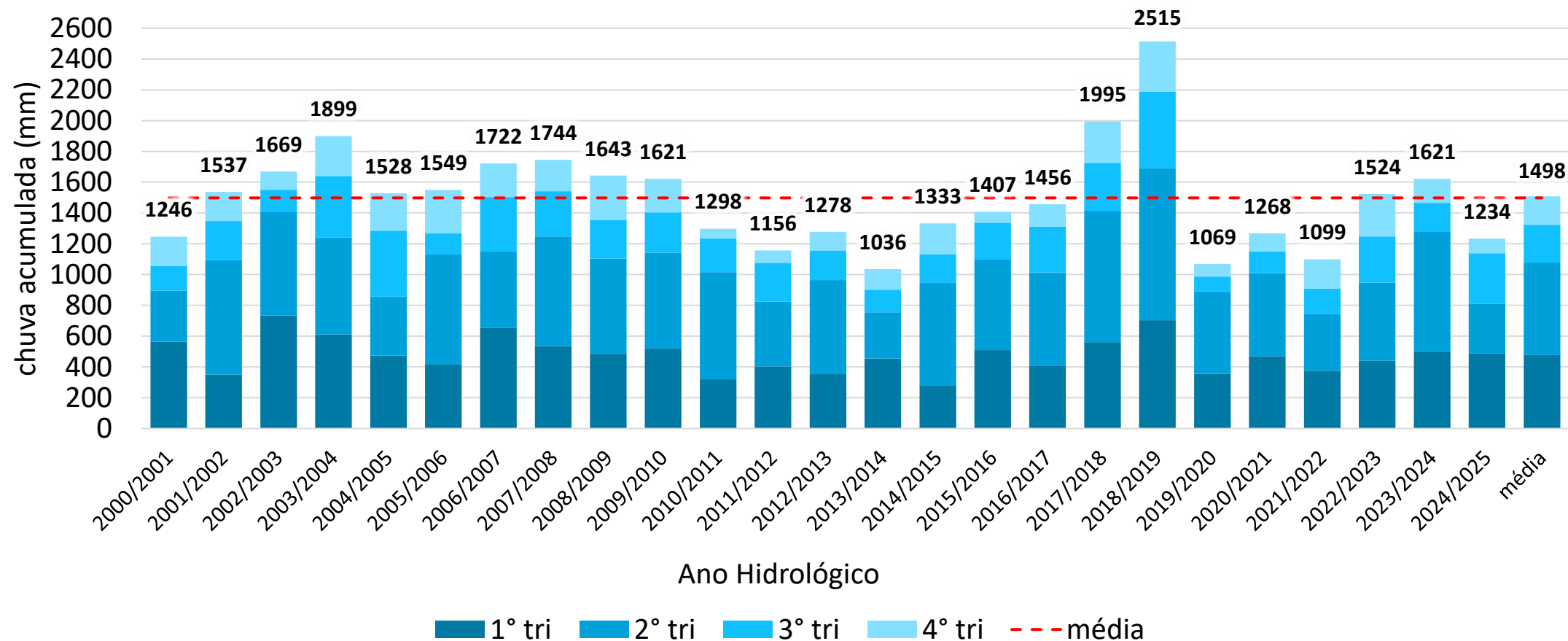
UGRHI 2 - Paraíba do Sul | SPI-06



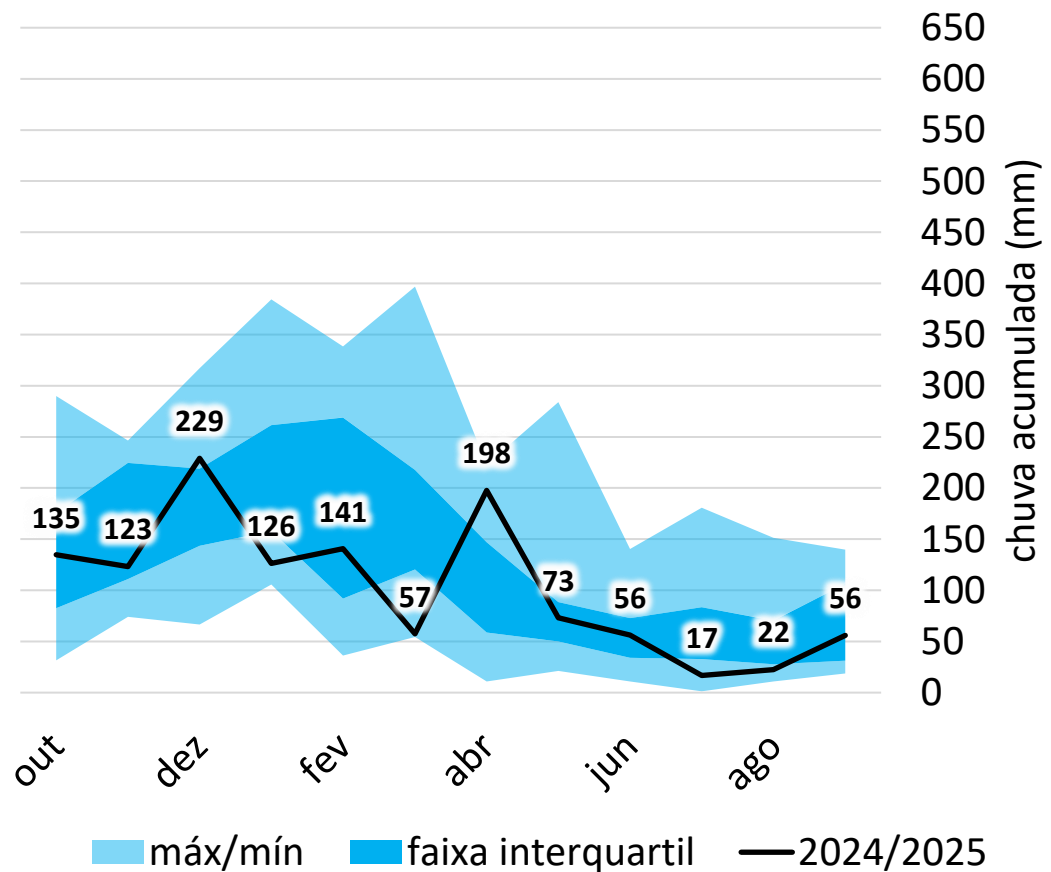
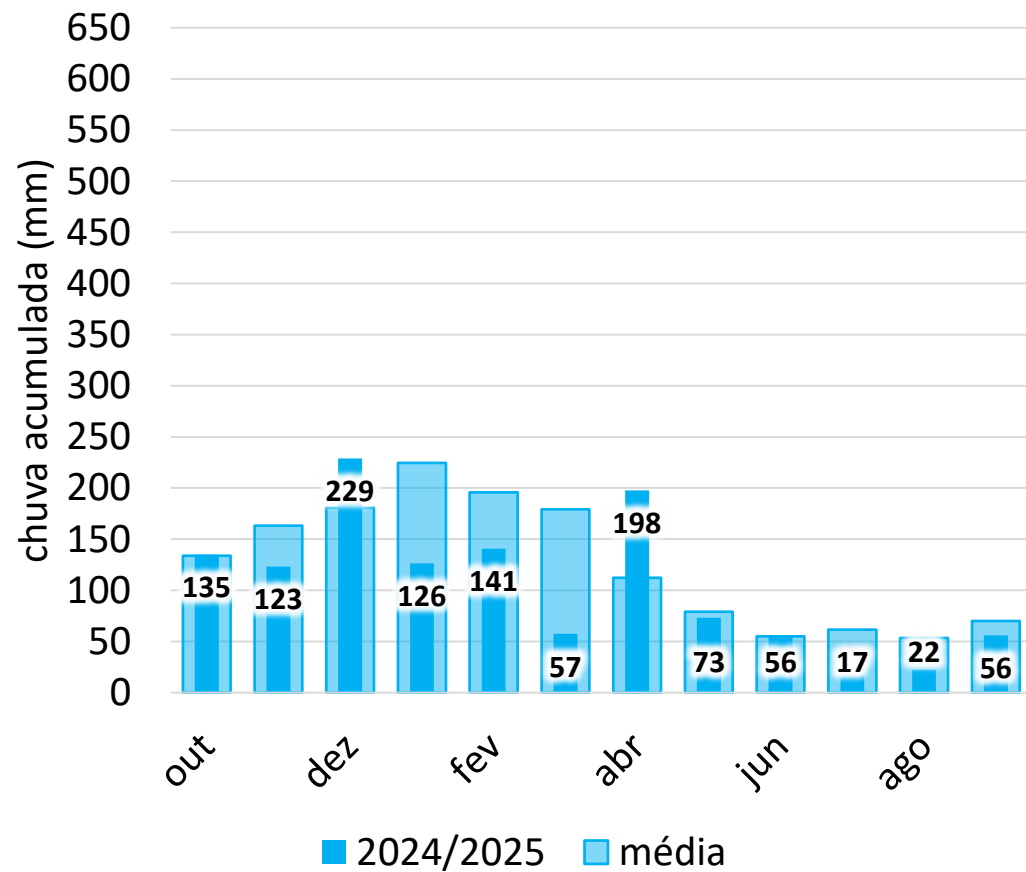
UGRHI 2 - Paraíba do Sul | SPI-12



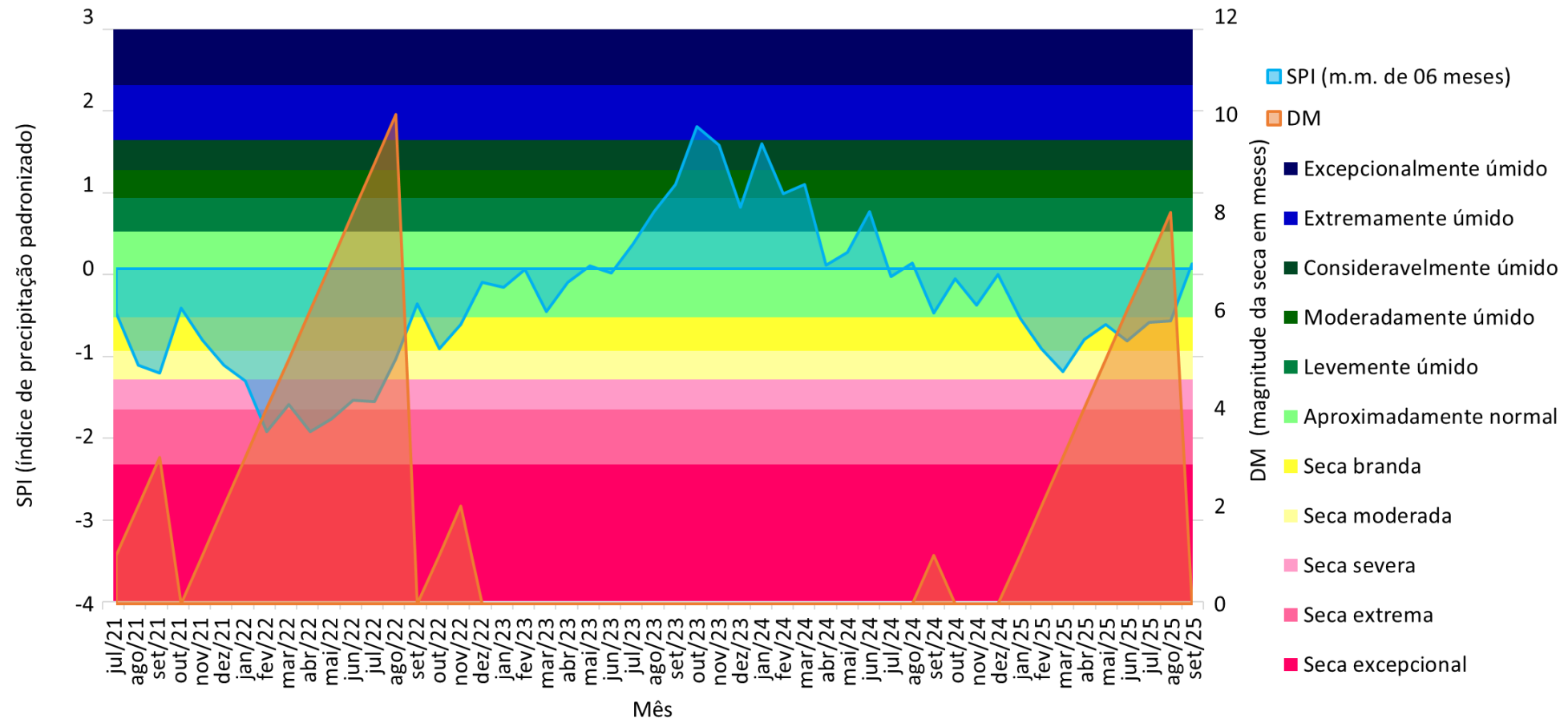
UGRHI 3 - Litoral Norte



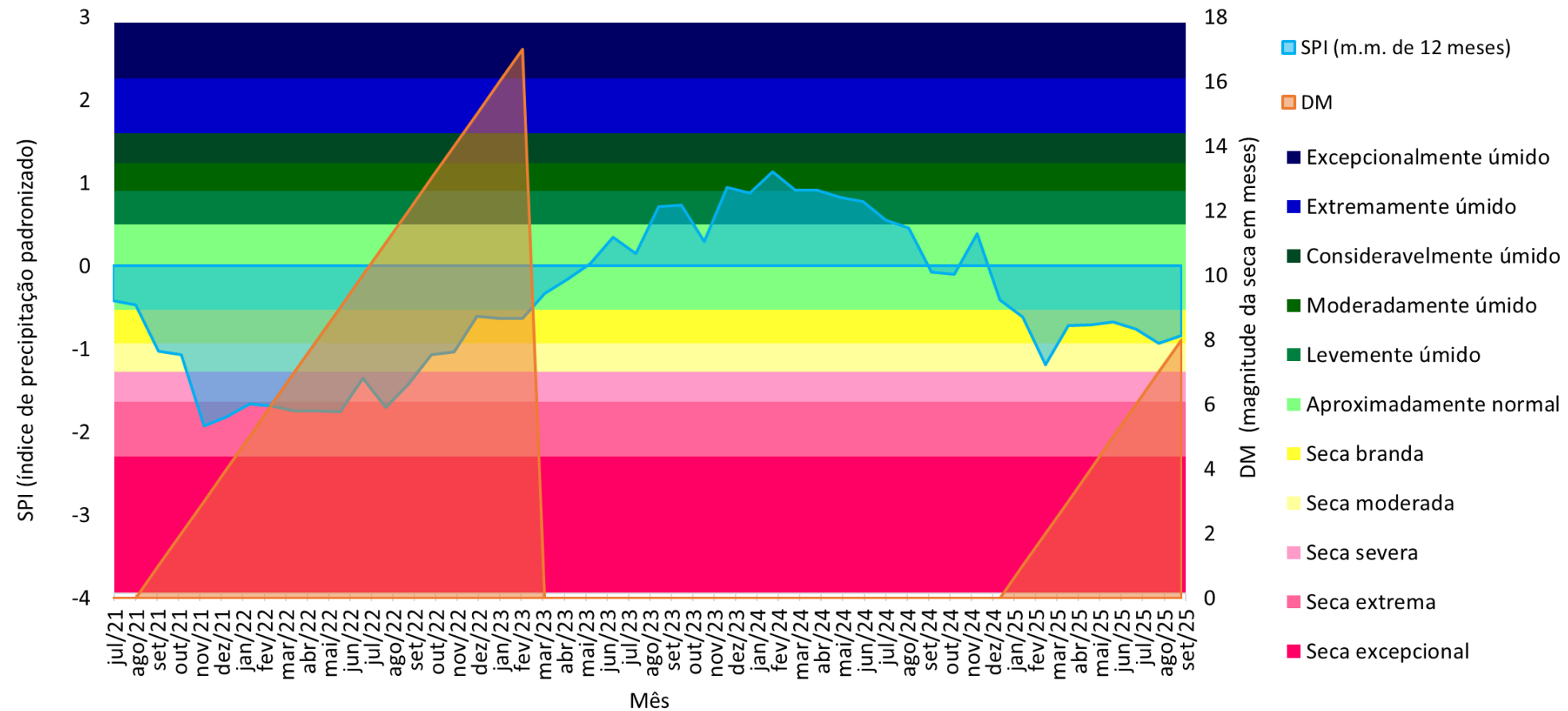
UGRHI 3 - Litoral Norte



UGRHI 3 - Litoral Norte | SPI-06

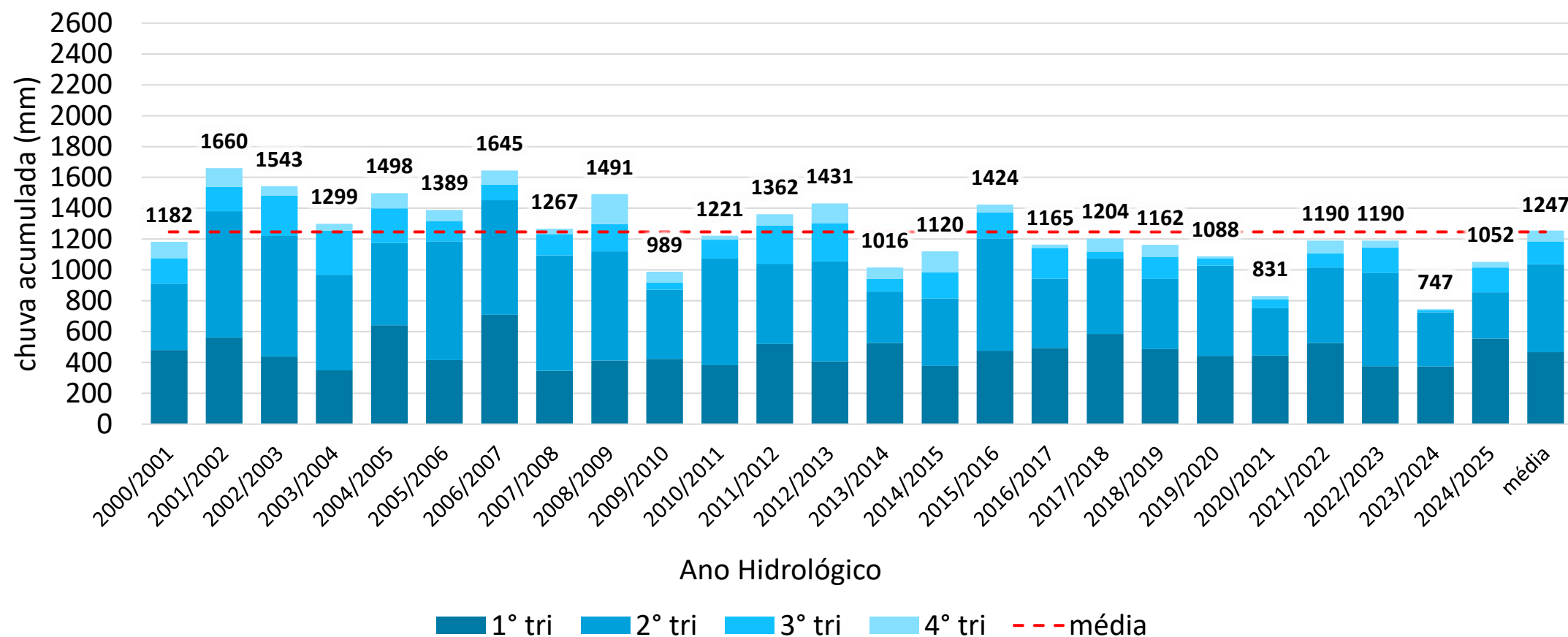


UGRHI 3 - Litoral Norte | SPI-12

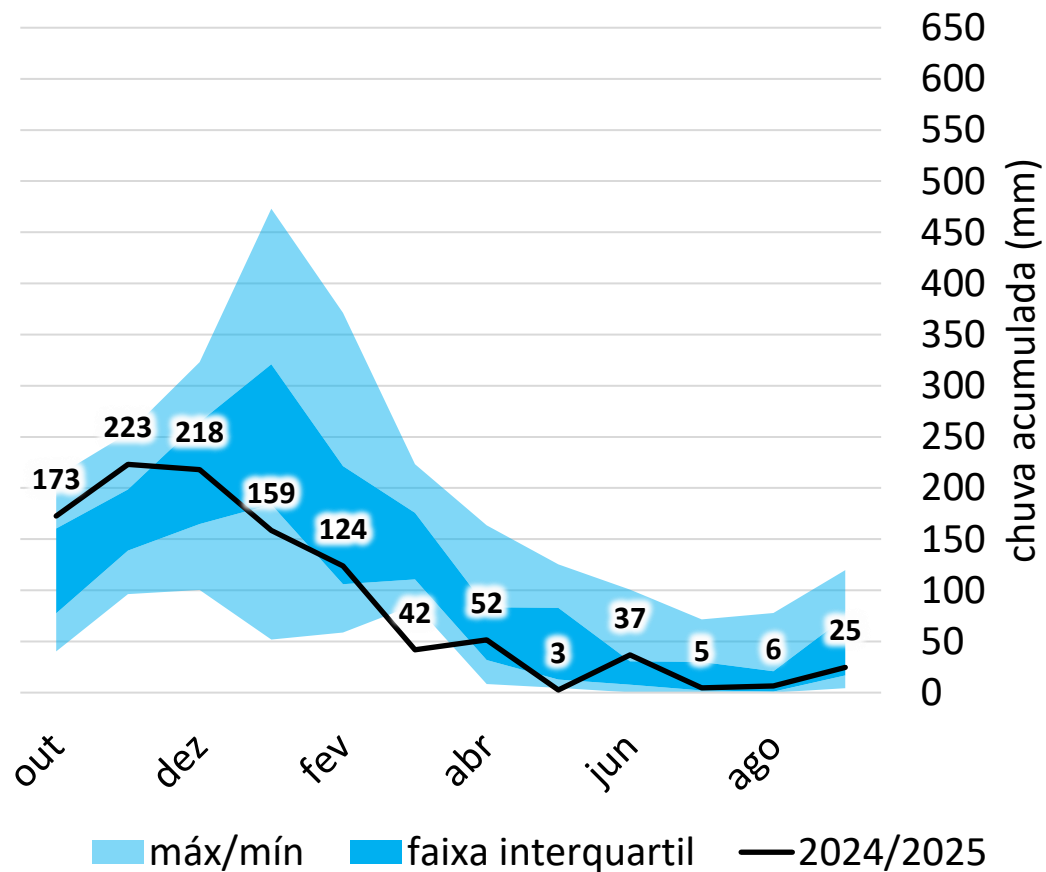
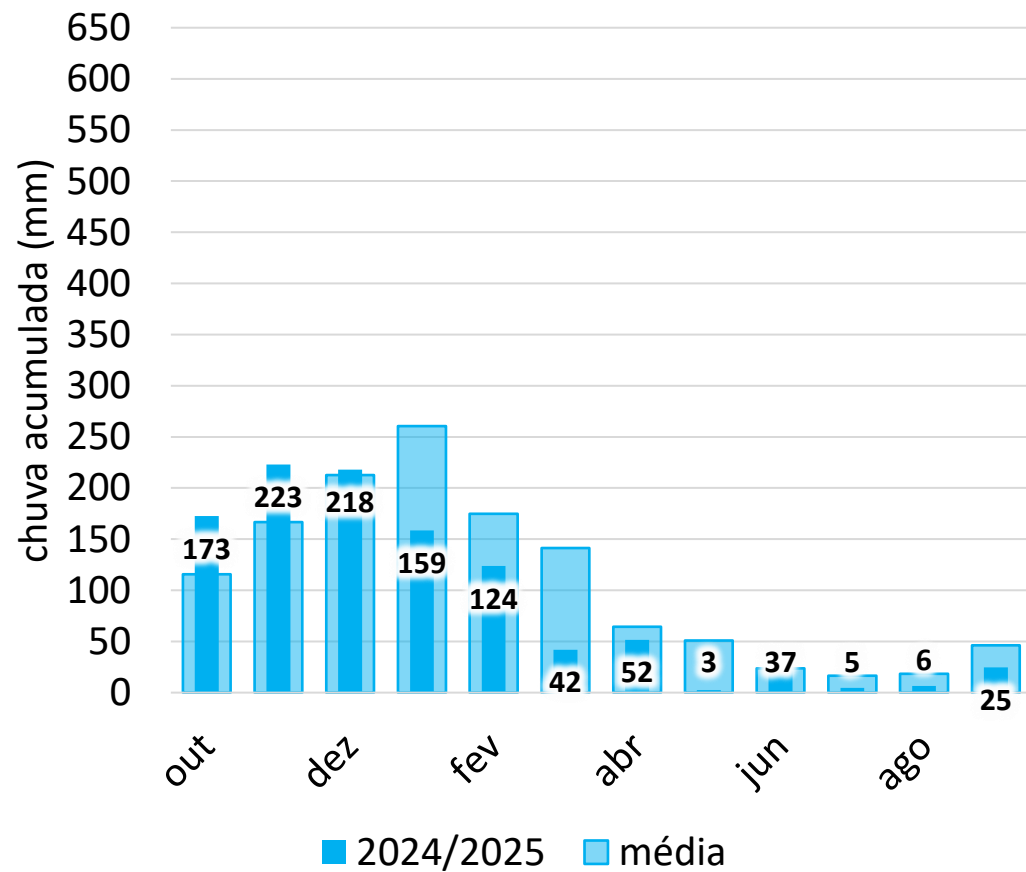




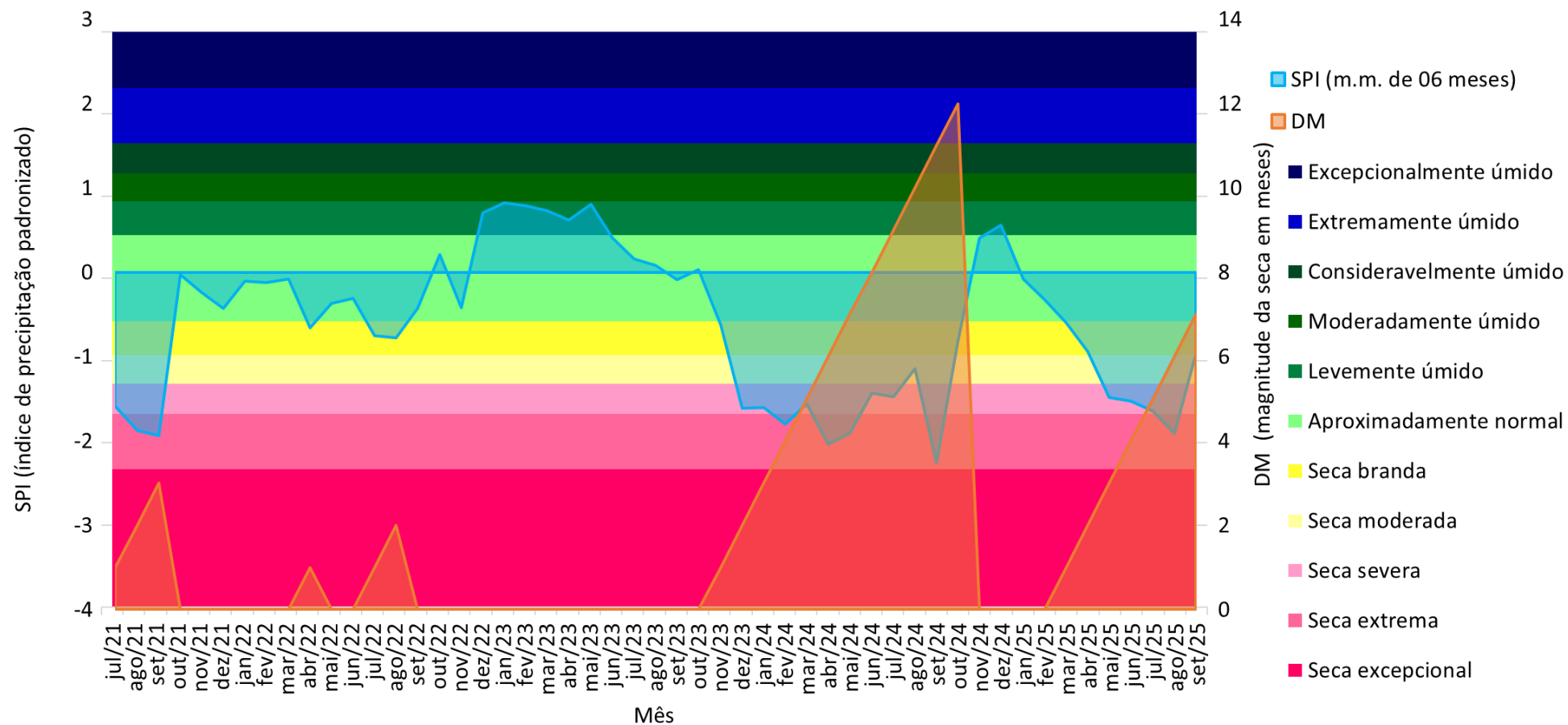
UGRHI 4 - Pardo



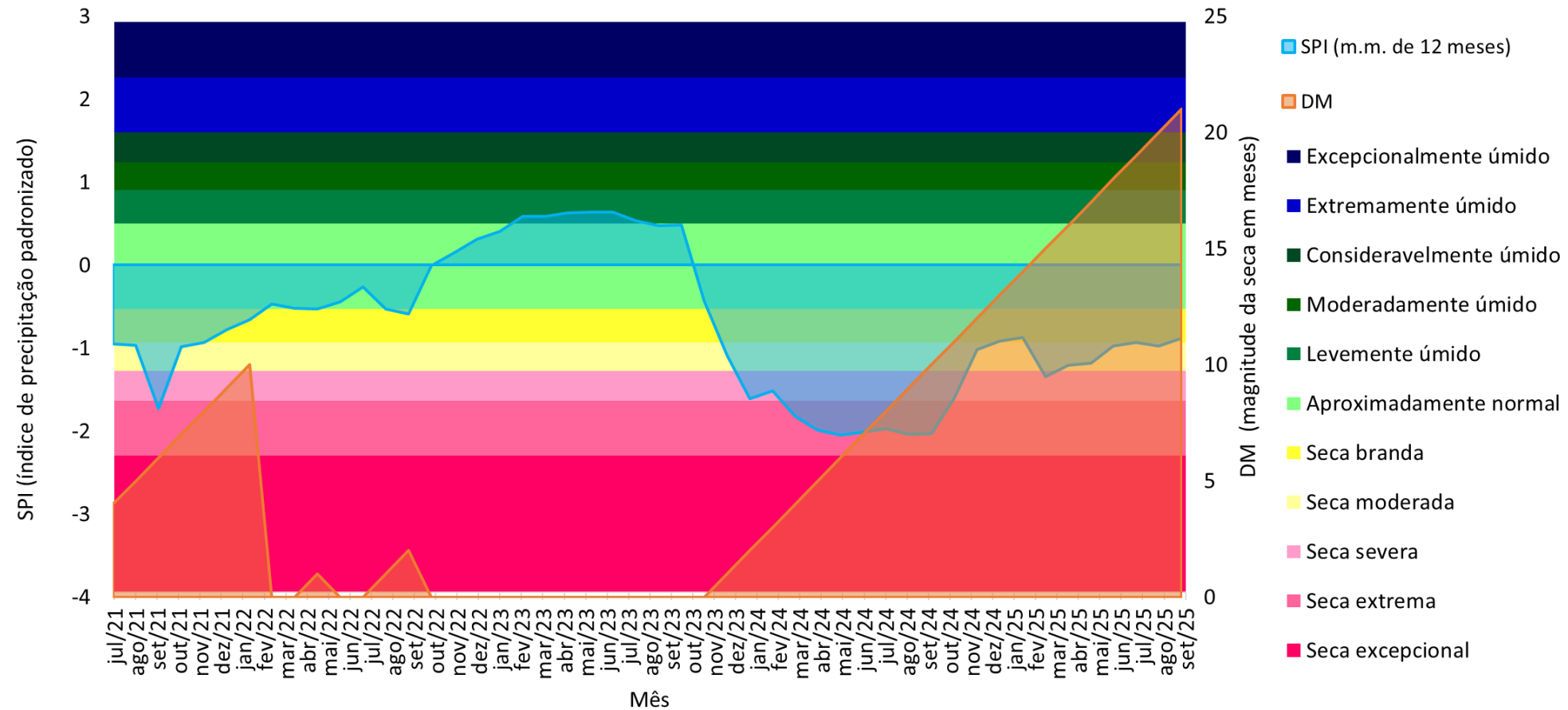
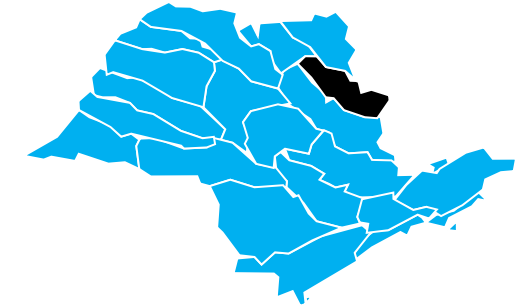
UGRHI 4 - Pardo



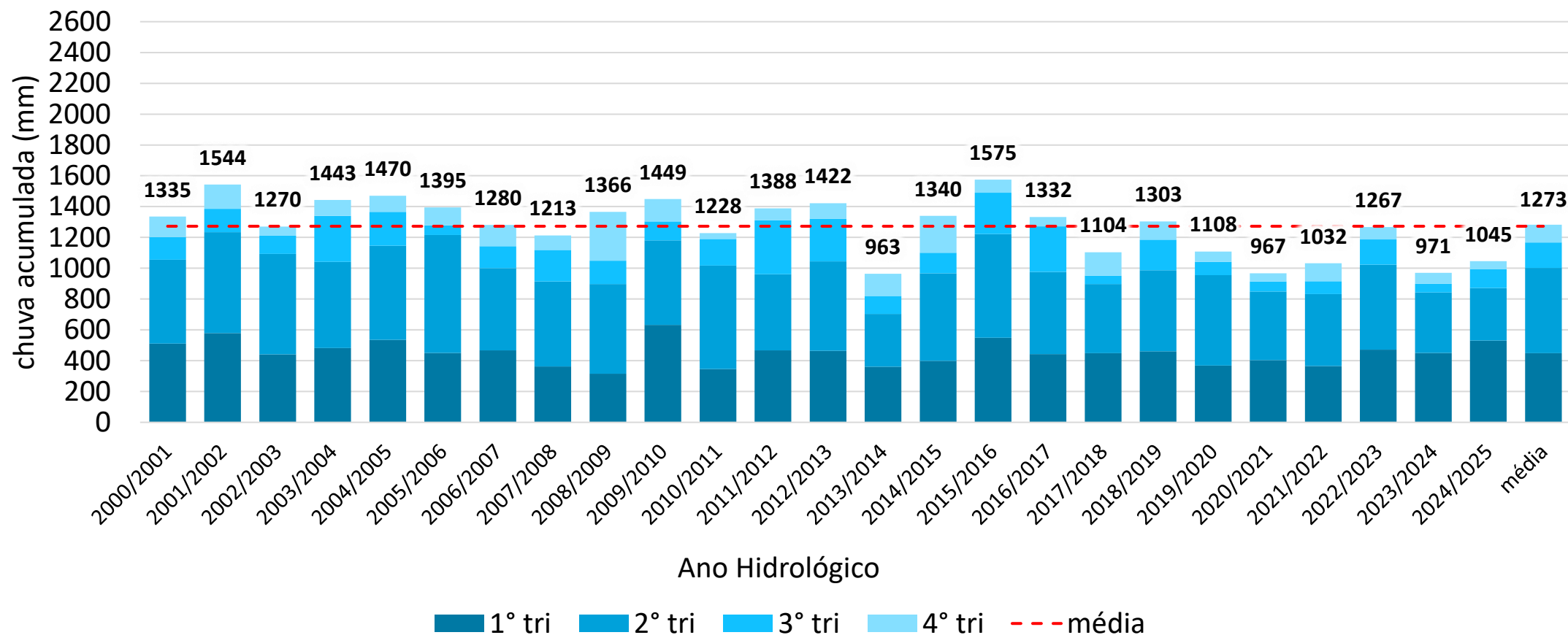
UGRHI 4 - Pardo | SPI-06



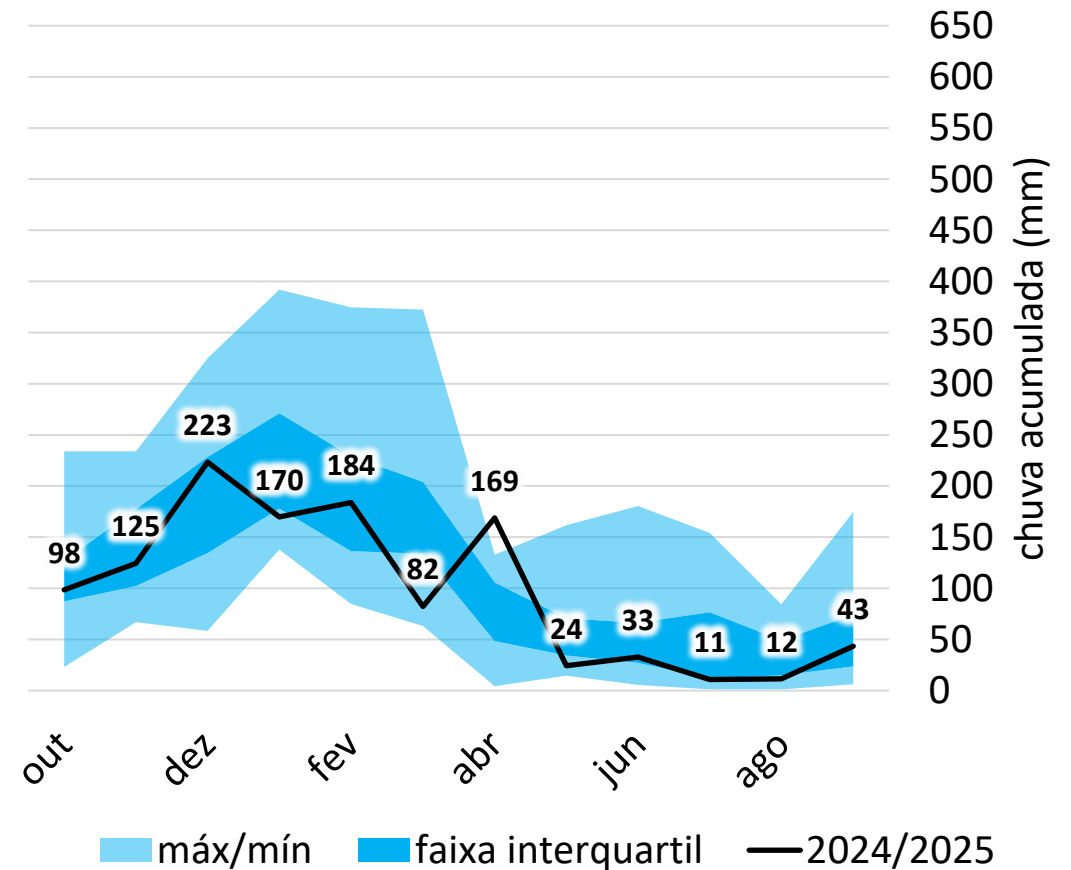
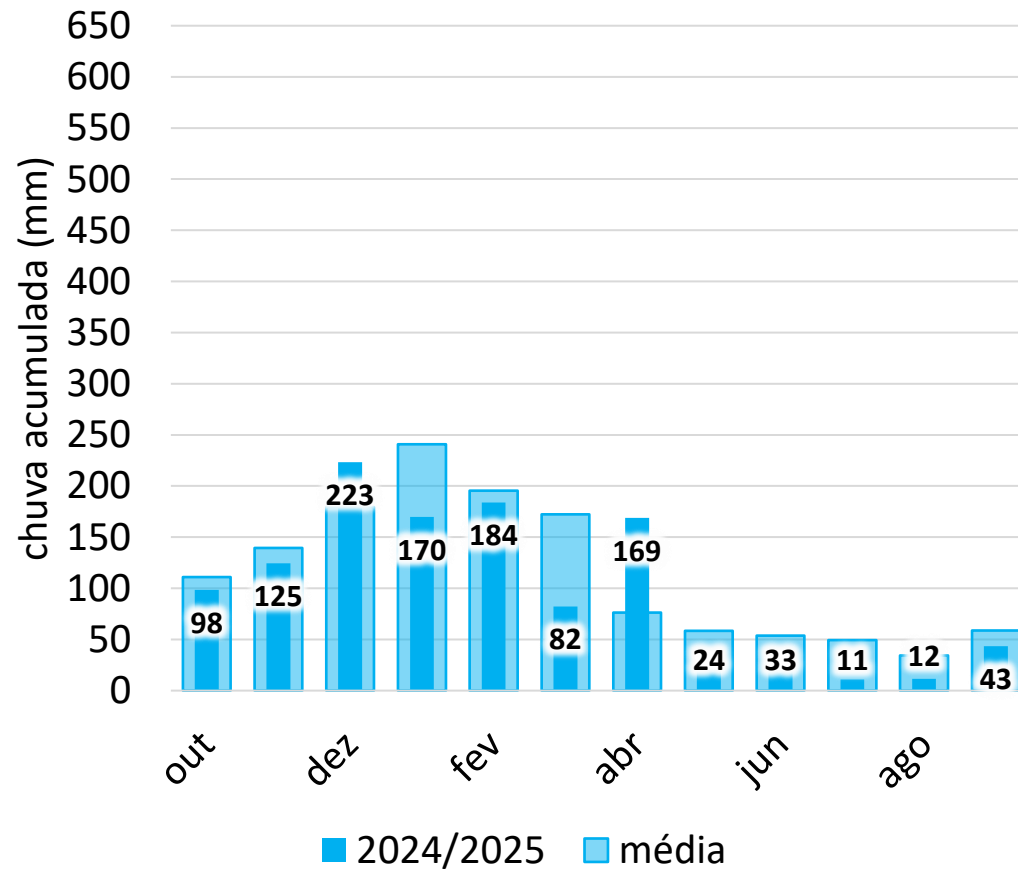
UGRHI 4 - Pardo | SPI-12



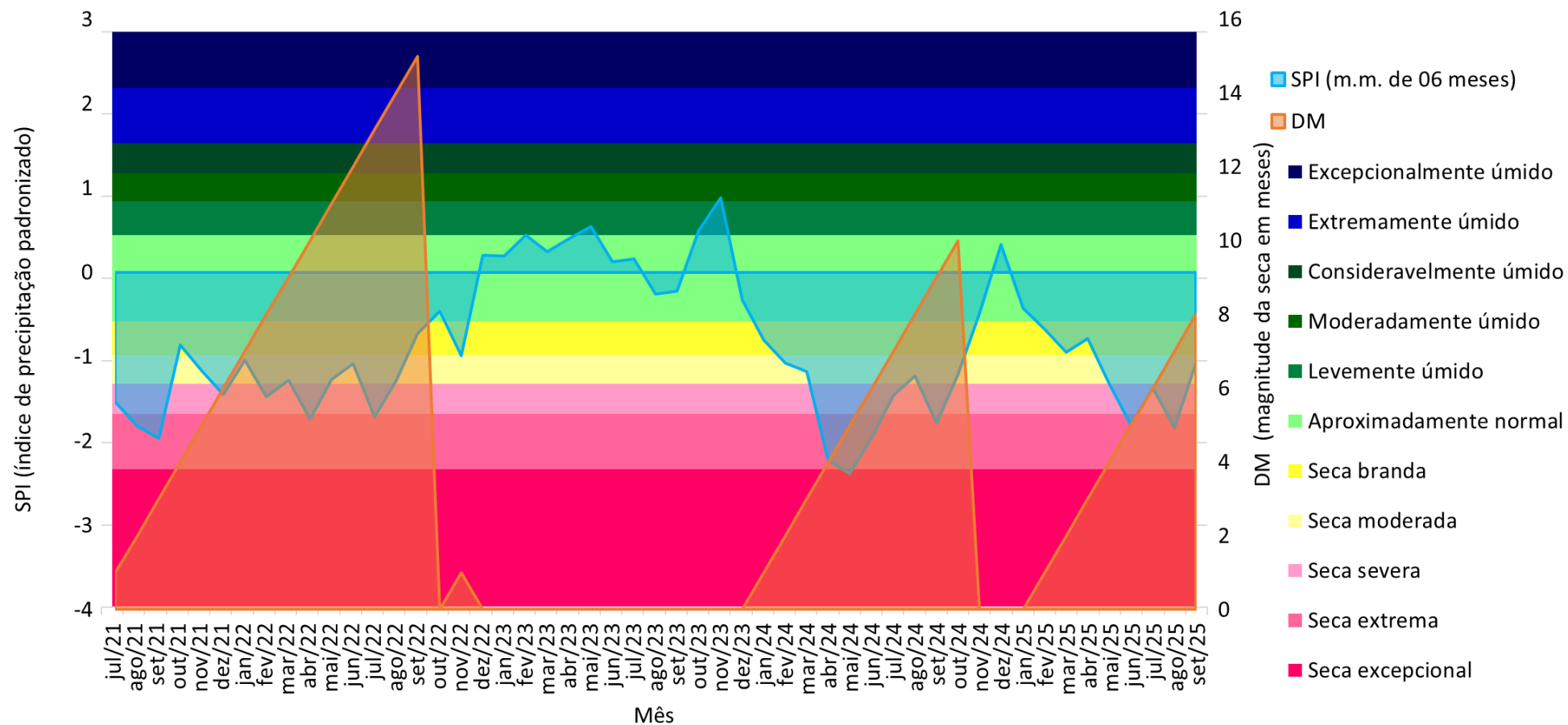
UGRHI 5 - Piracicaba/Capivari/Jundiaí



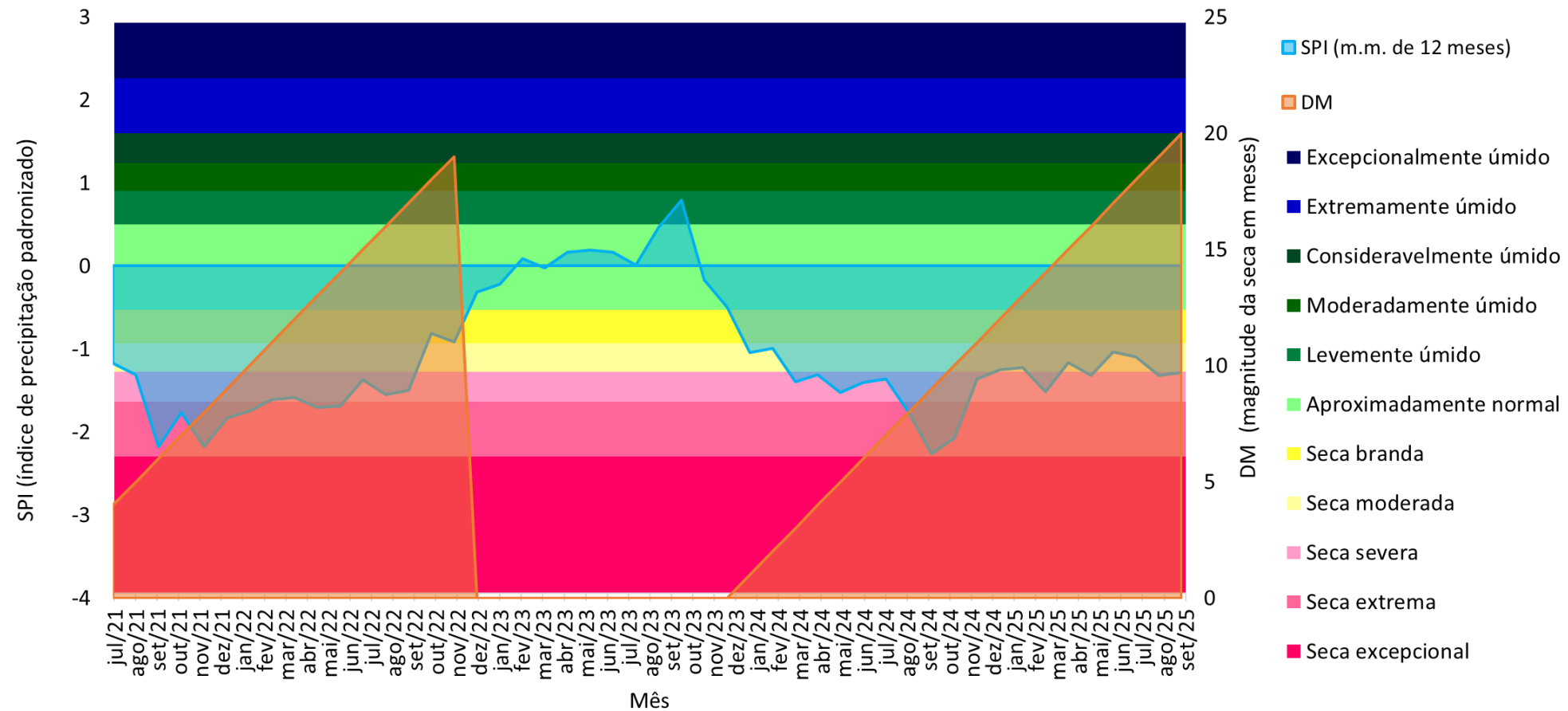
UGRHI 5 - Piracicaba/Capivari/Jundiaí

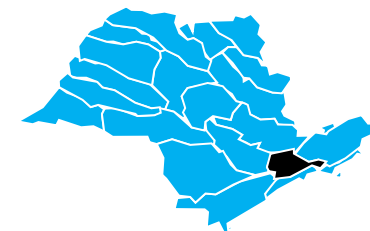


UGRHI 5 - Piracicaba/Capivari/Jundiaí | SPI-06

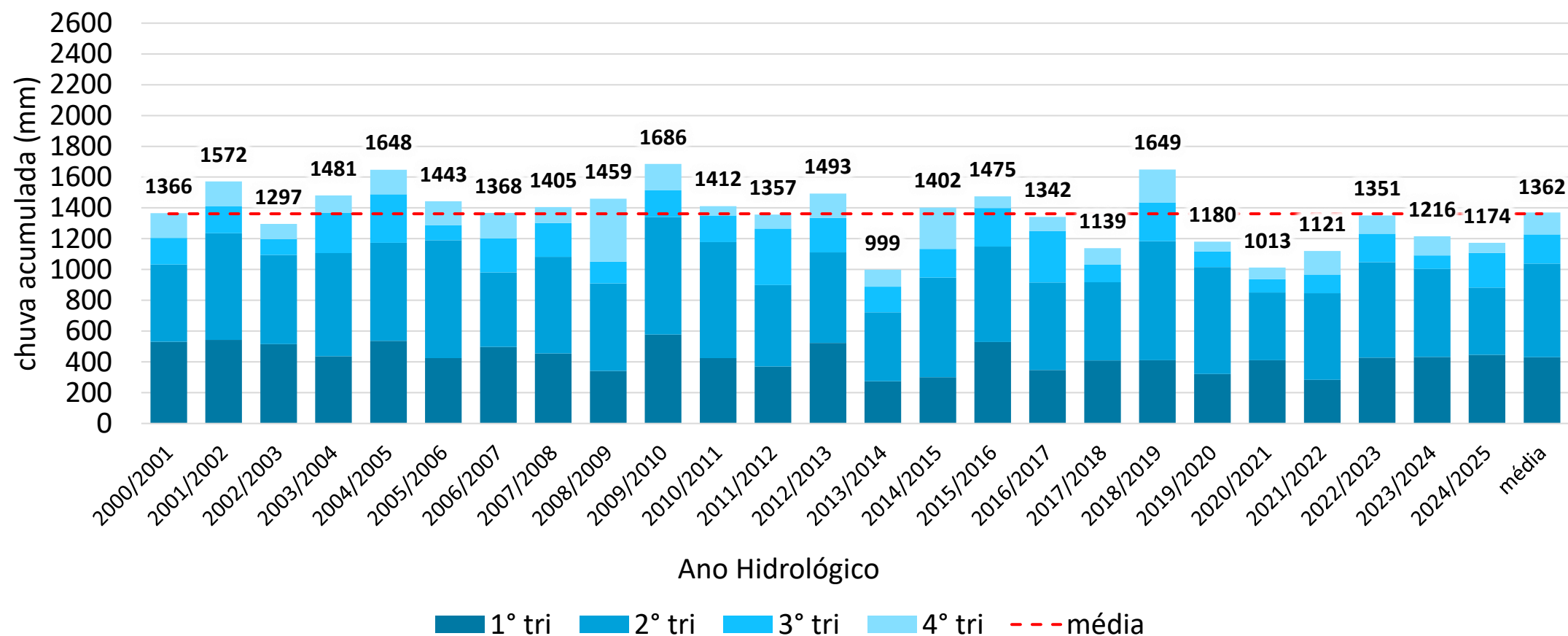


UGRHI 5 - Piracicaba/Capivari/Jundiaí | SPI-12

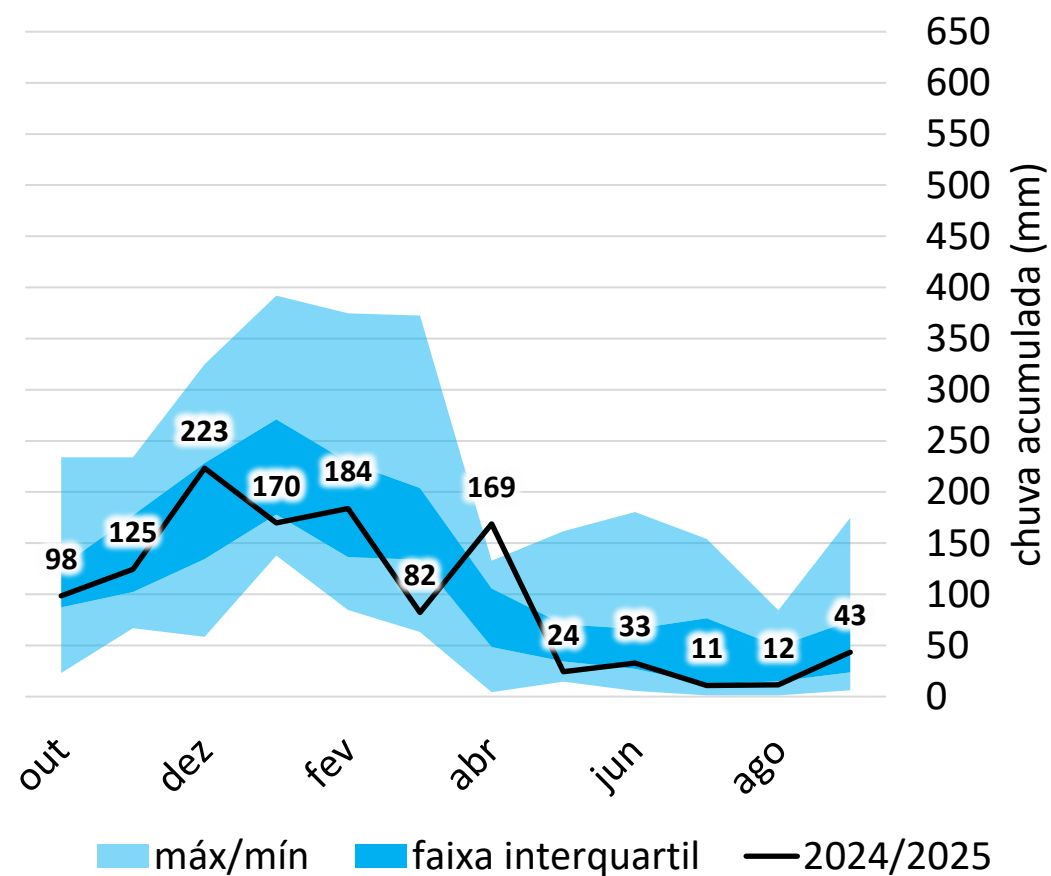
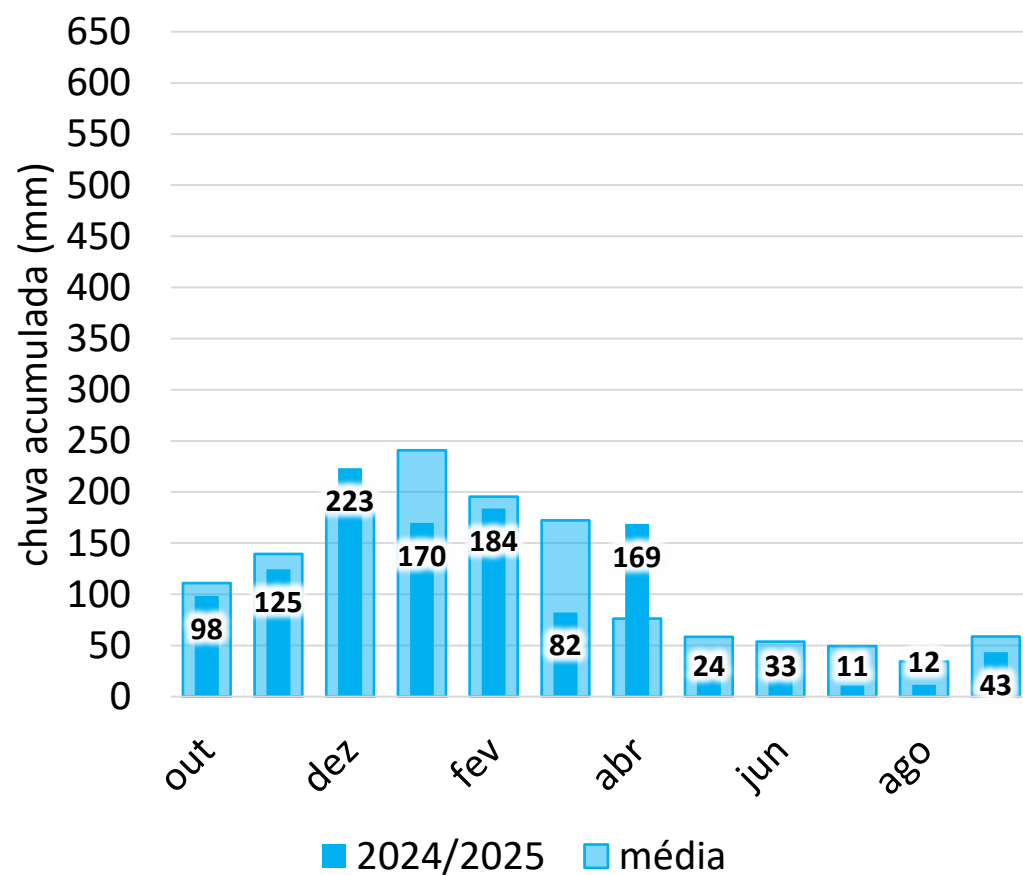
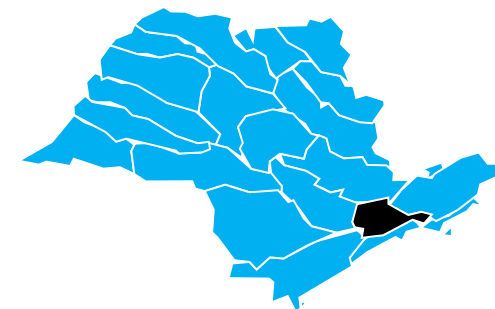




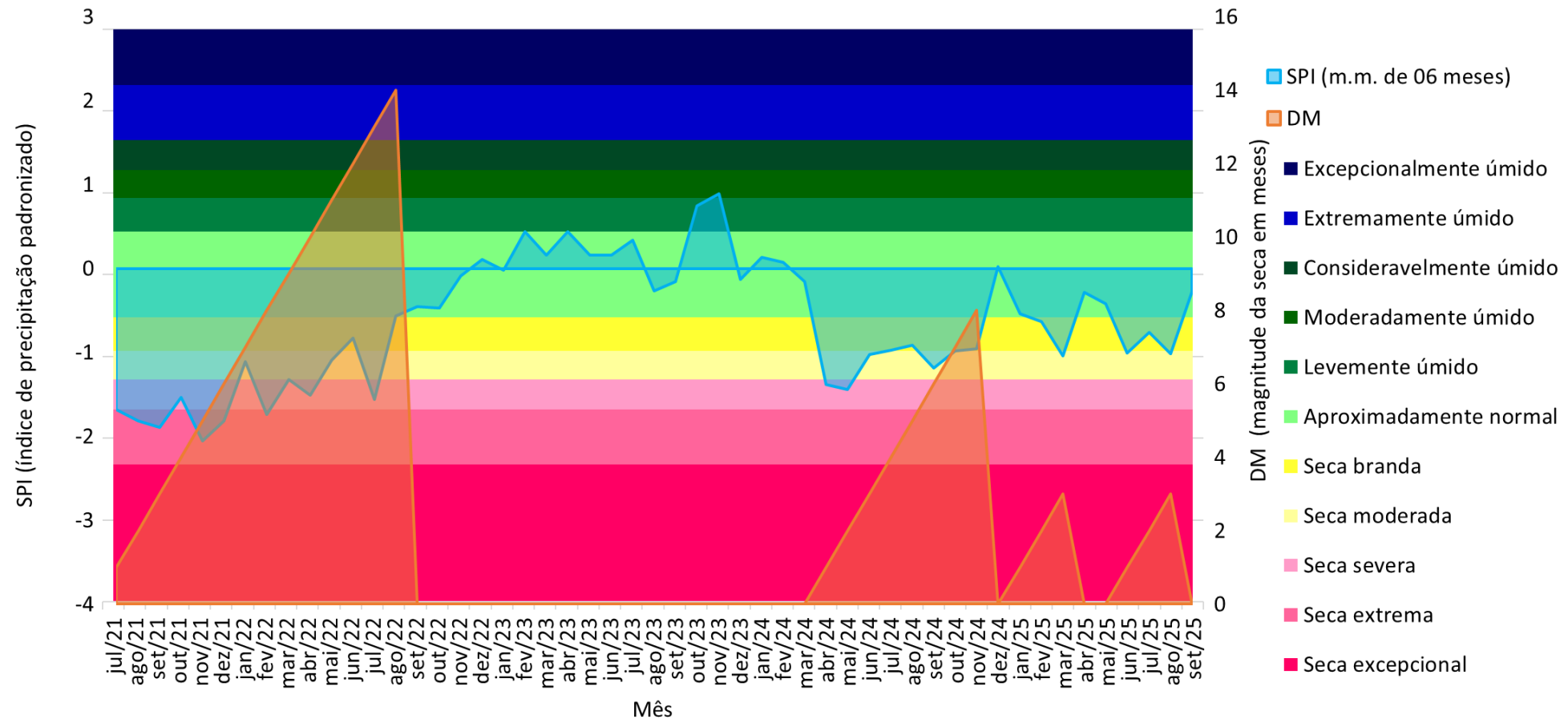
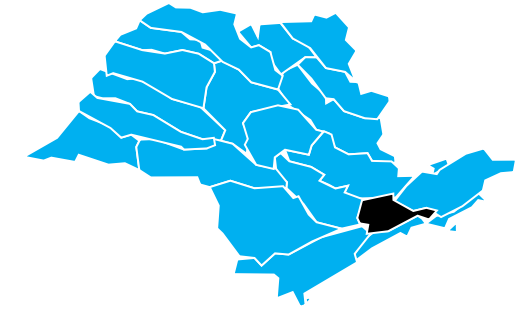
UGRHI 6 - Alto Tietê



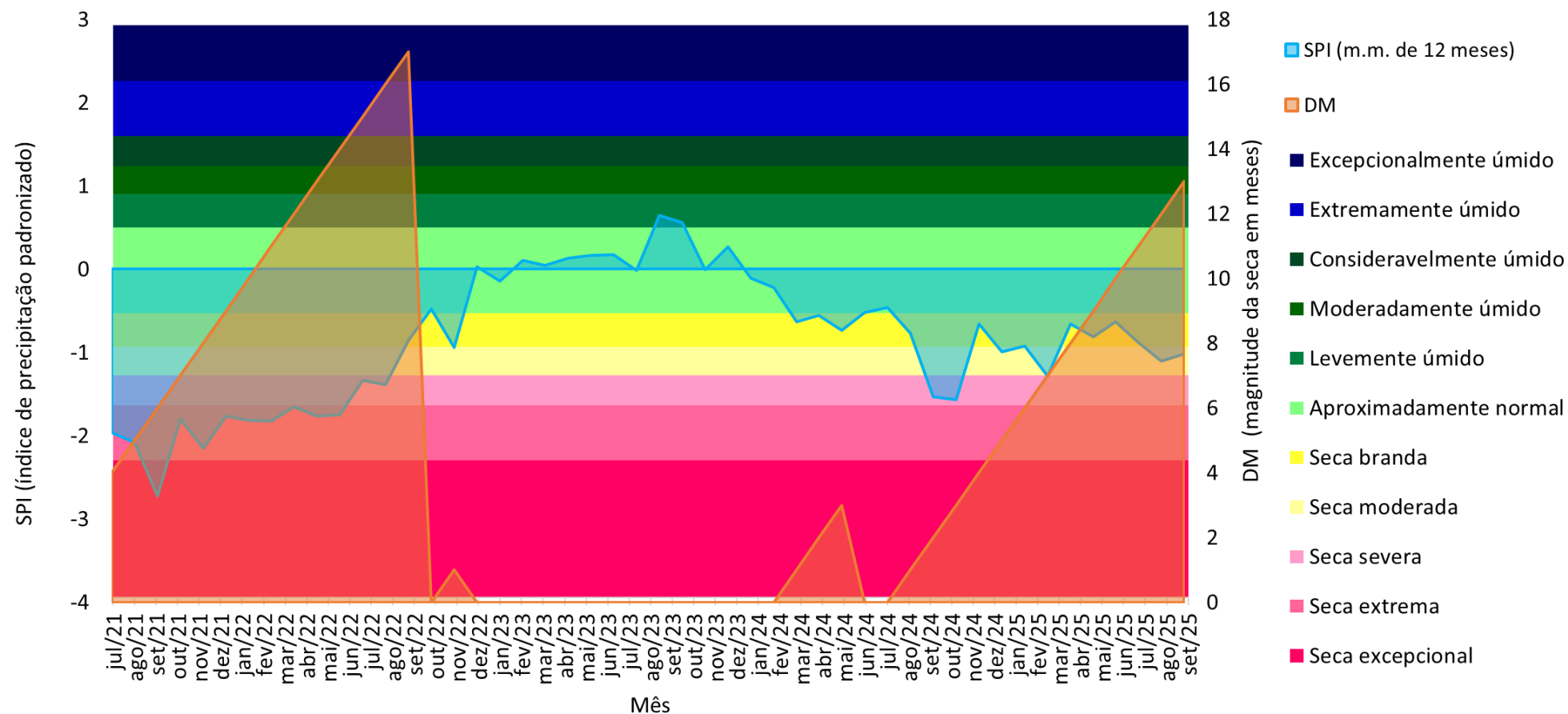
UGRHI 6 - Alto Tietê



UGRHI 6 - Alto Tietê | SPI-06

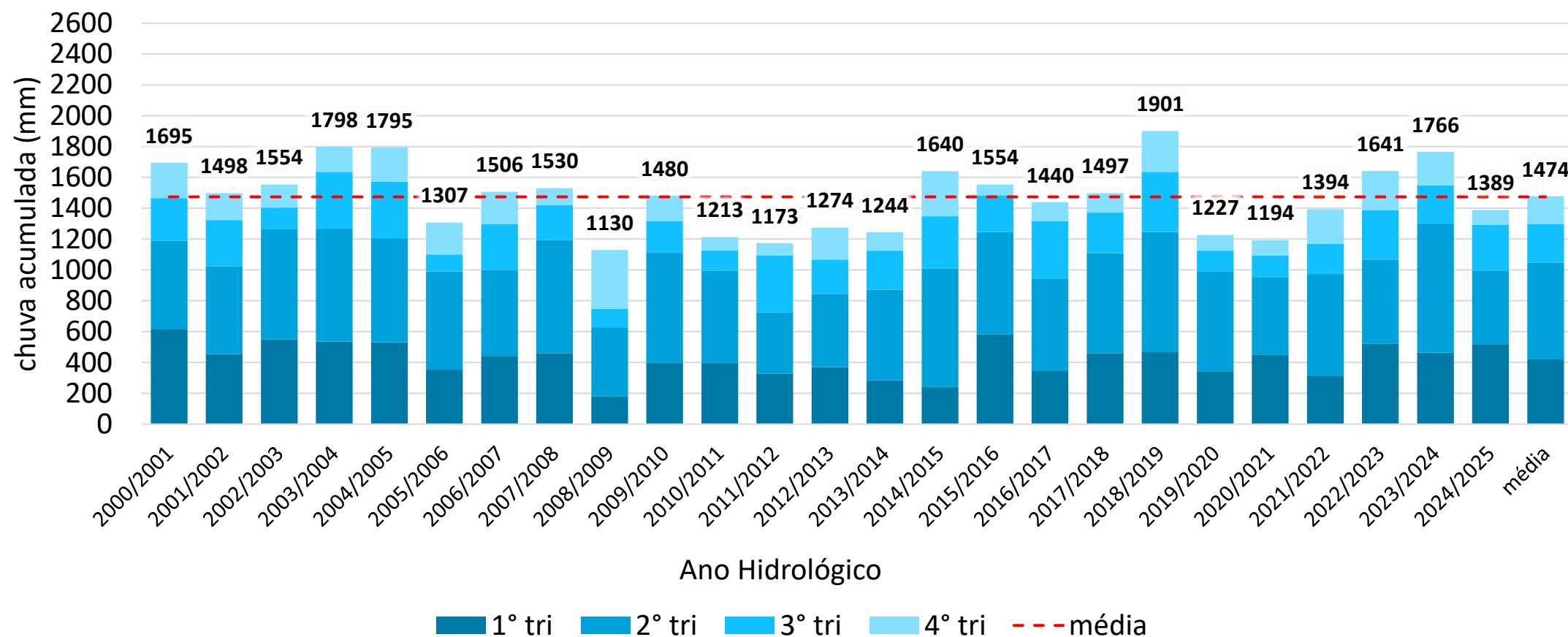


UGRHI 6 - Alto Tietê | SPI-12

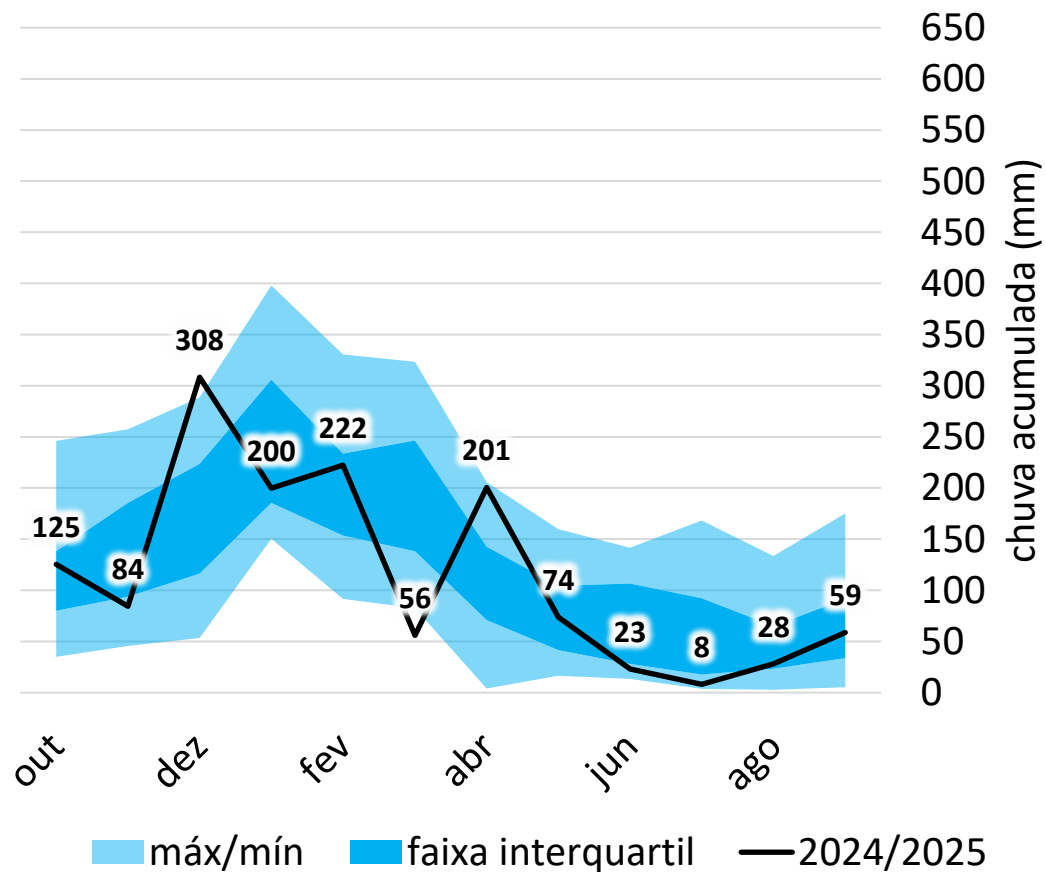
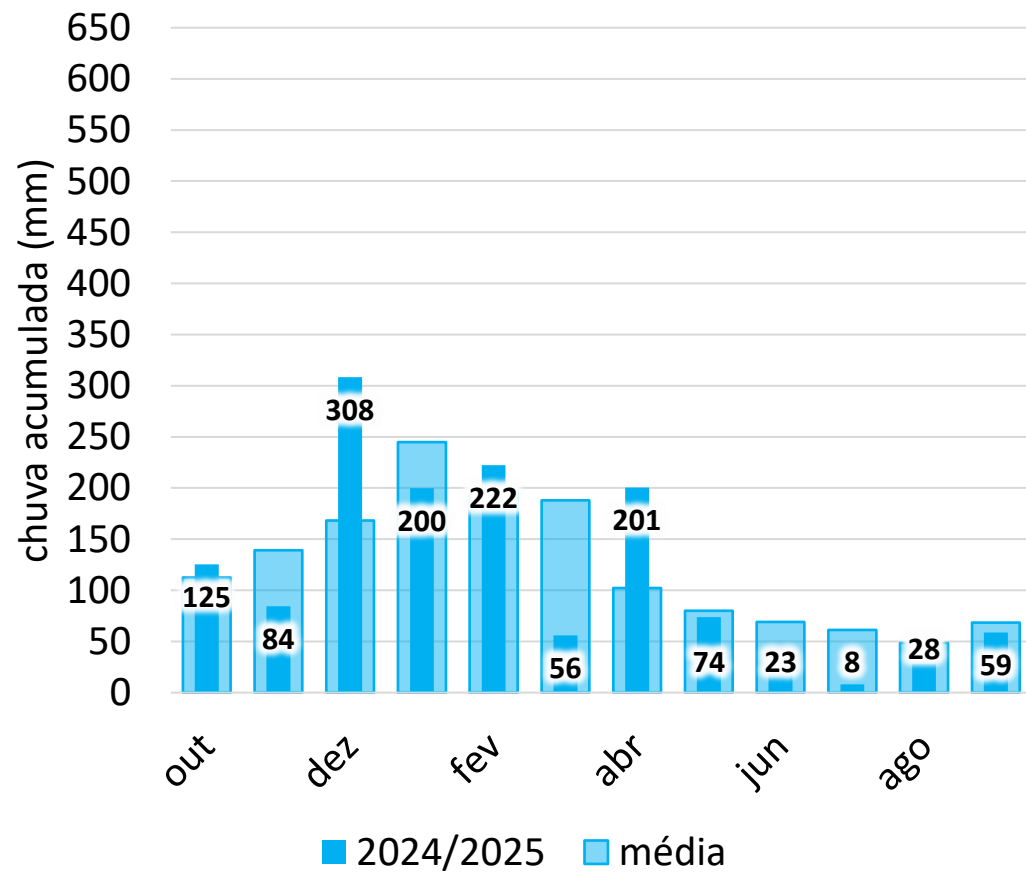




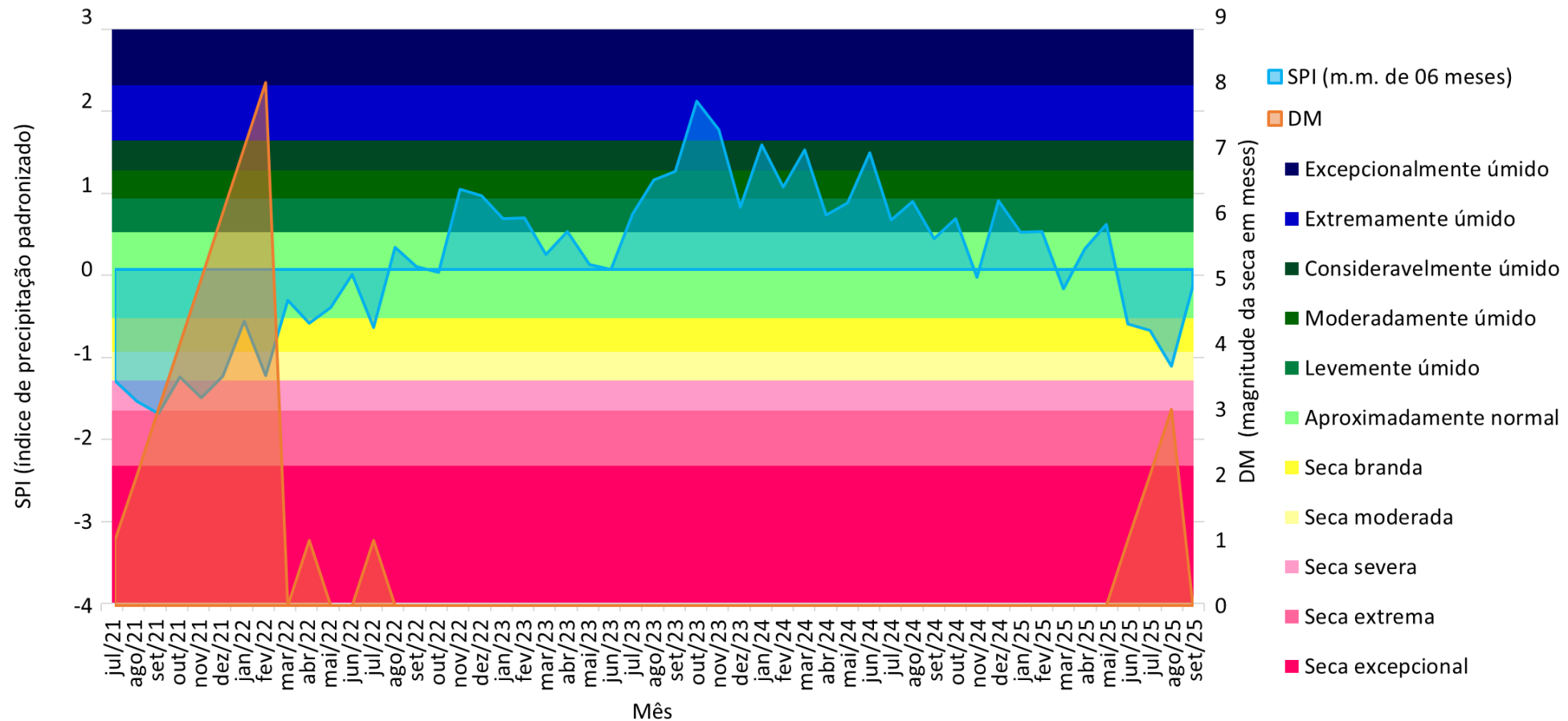
UGRHI 7 - Baixada Santista



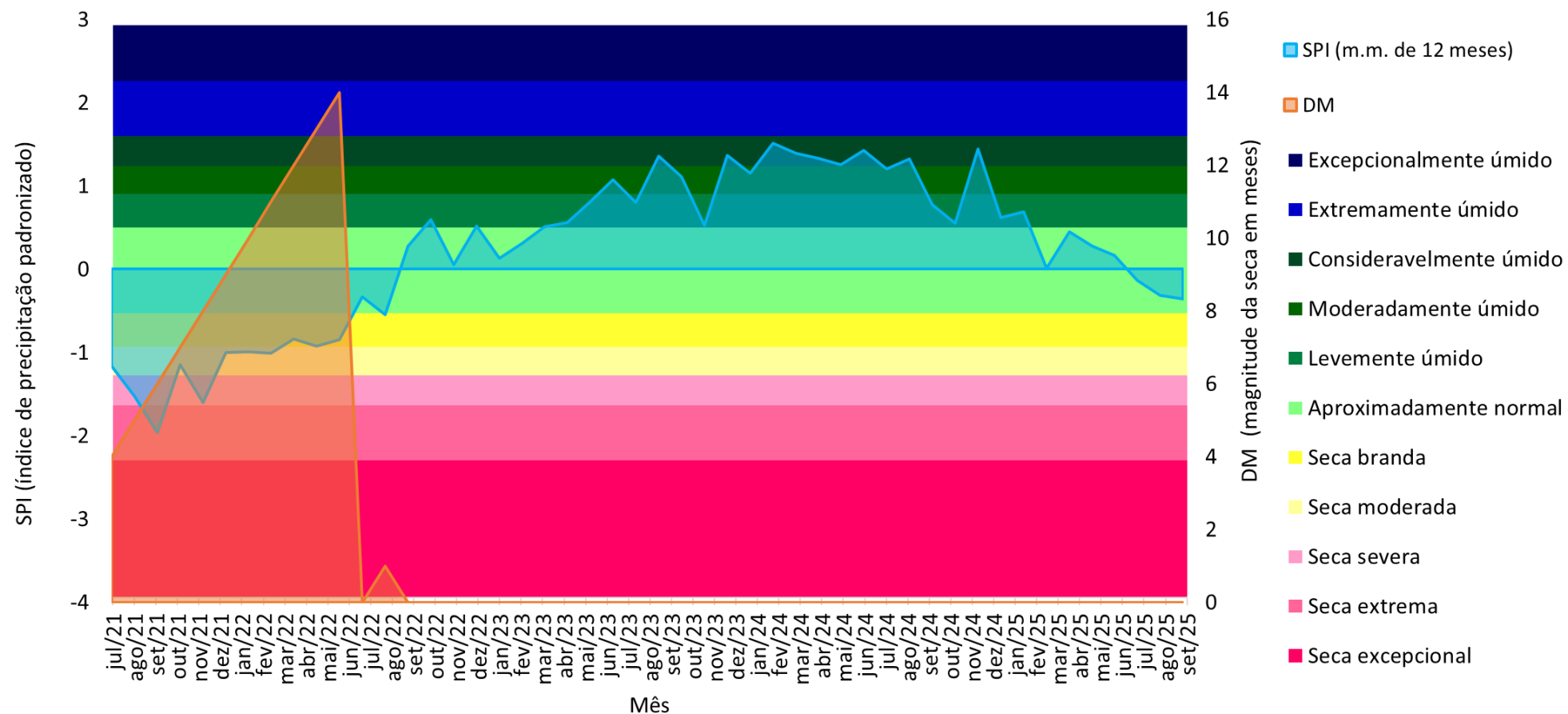
UGRHI 7 - Baixada Santista

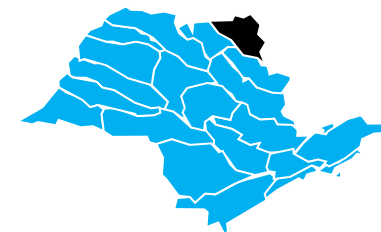


UGRHI 7 - Baixada Santista | SPI-06

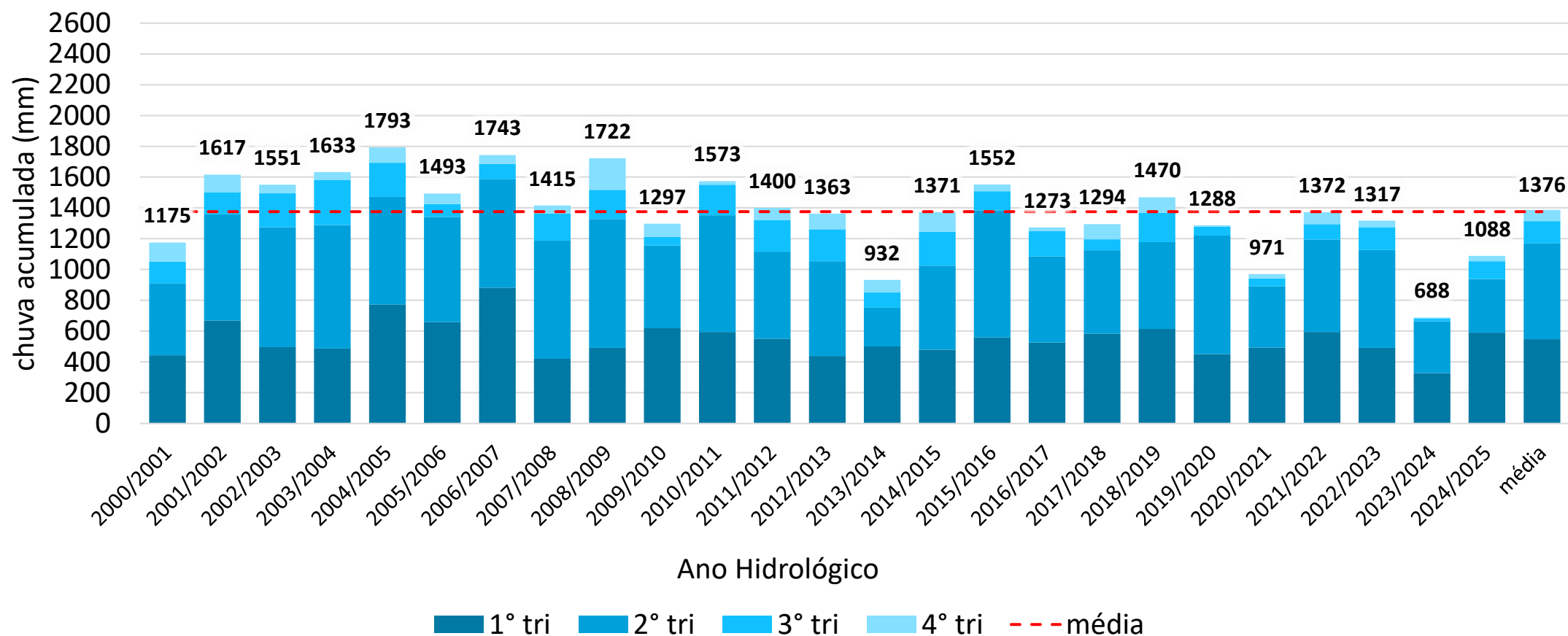


UGRHI 7 - Baixada Santista | SPI-12

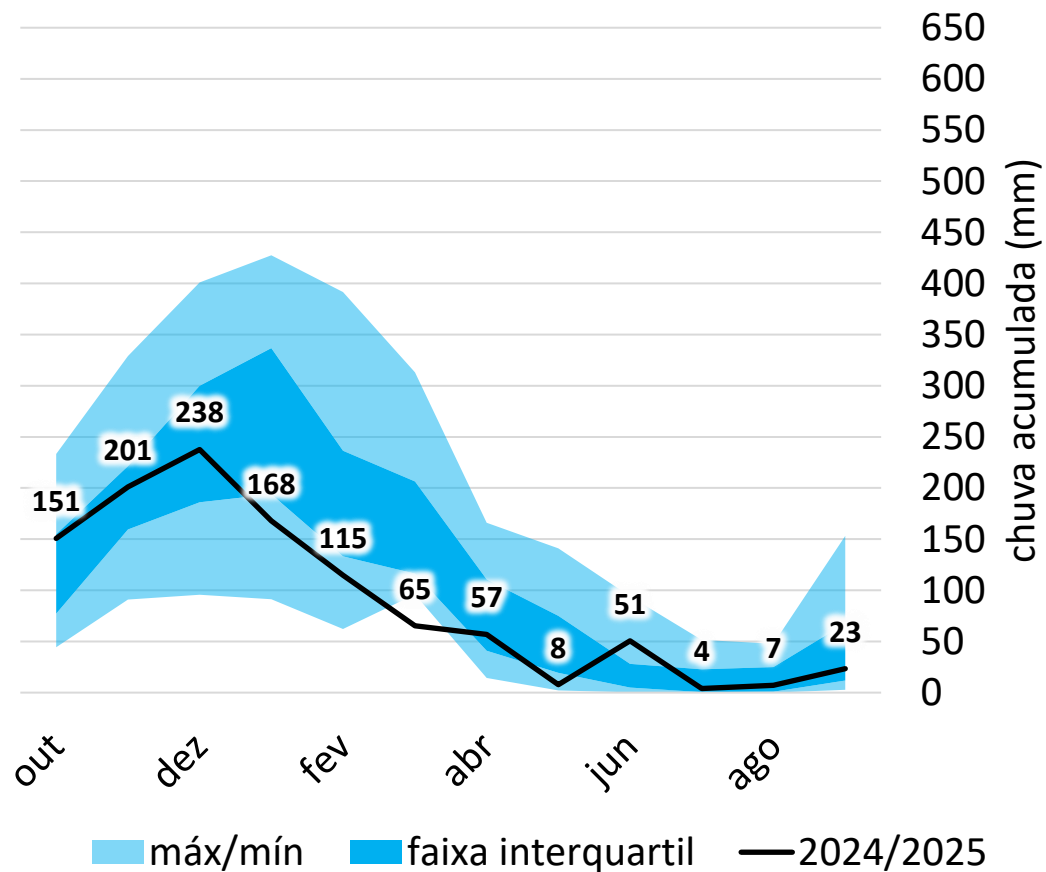
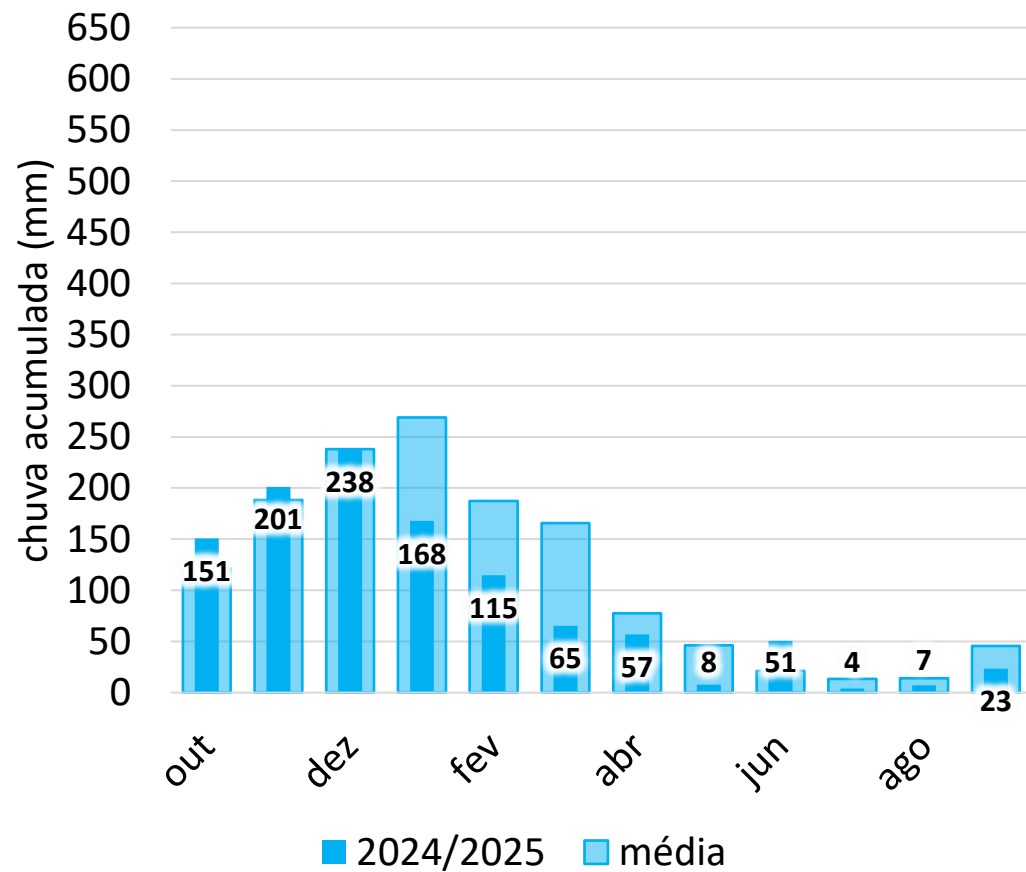
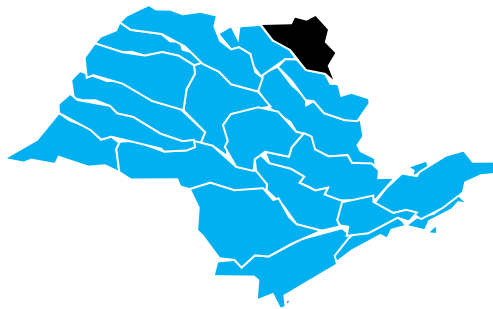




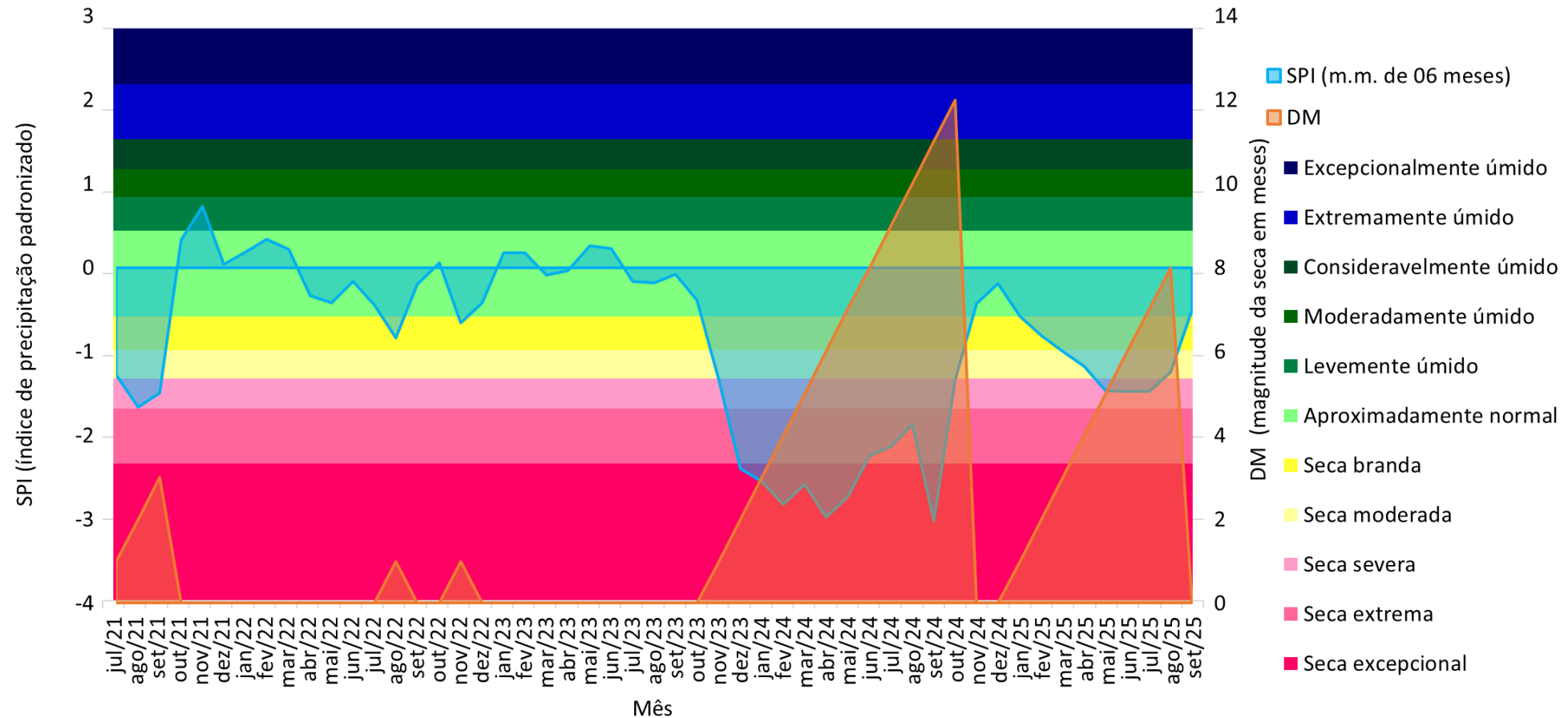
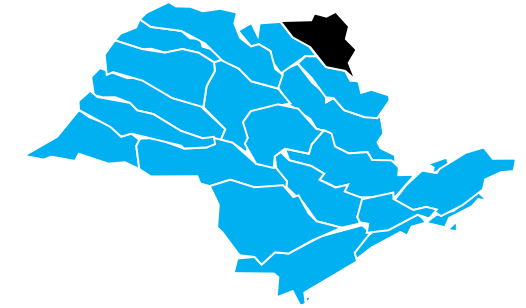
UGRHI 8 - Sapucaí/Grande



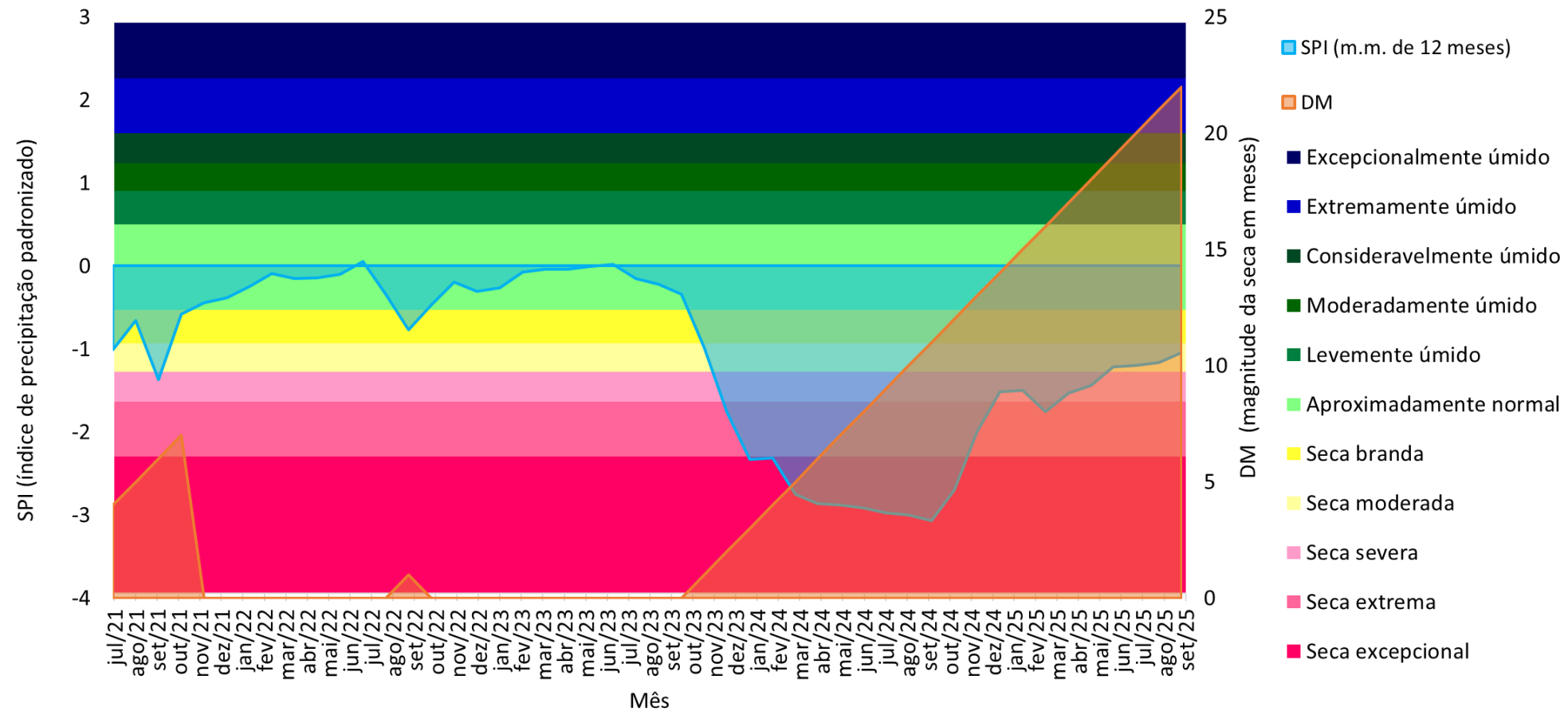
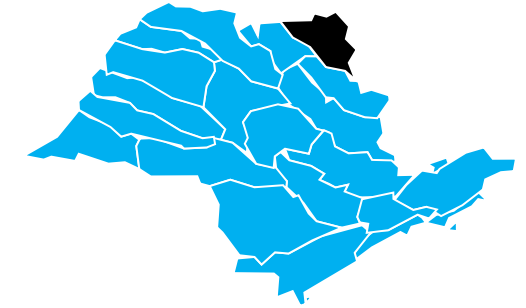
UGRHI 8 - Sapucaí/Grande



UGRHI 8 - Sapucaí/Grande | SPI-06

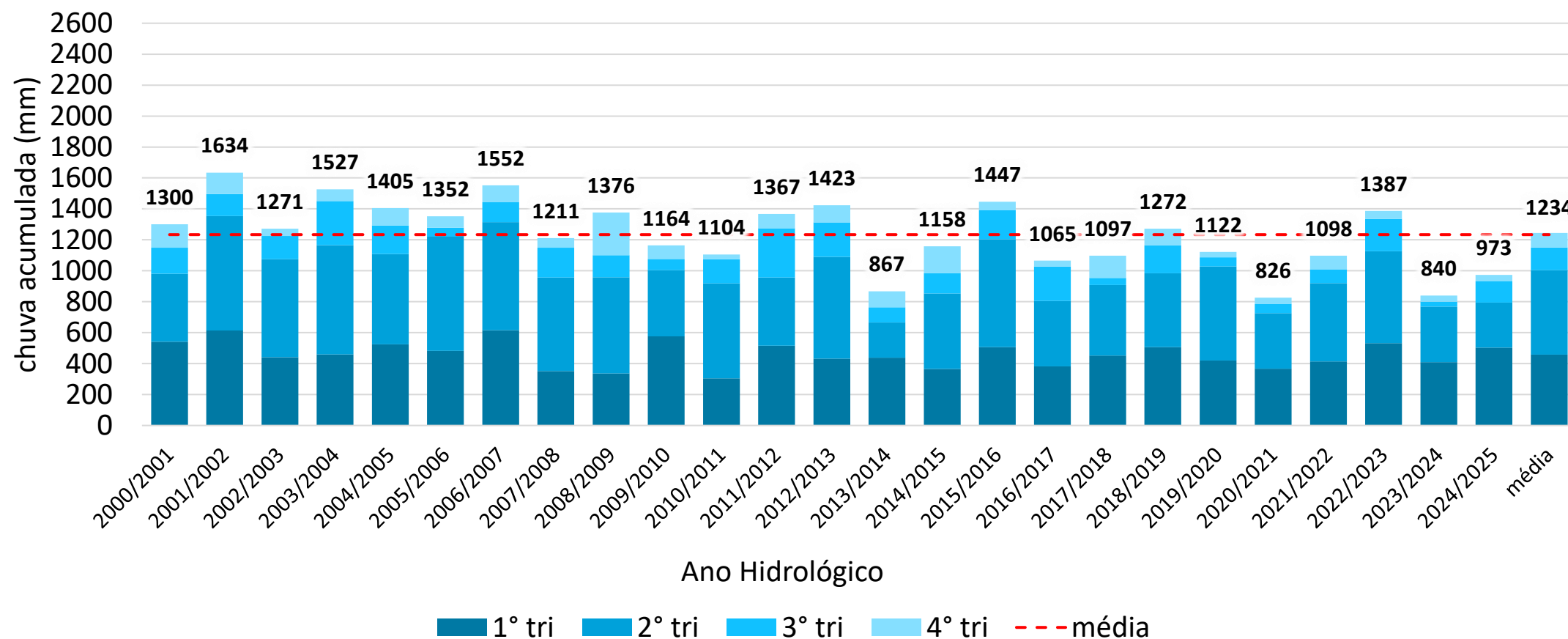


UGRHI 8 - Sapucaí/Grande | SPI-12

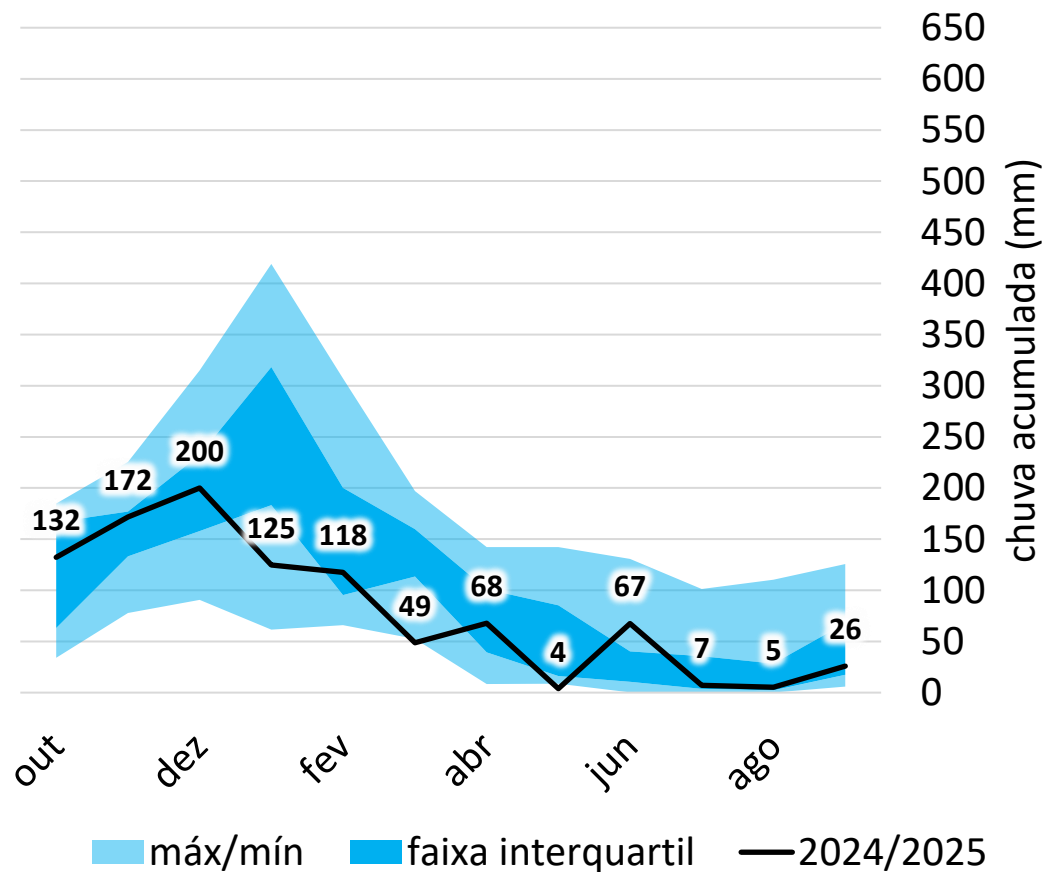
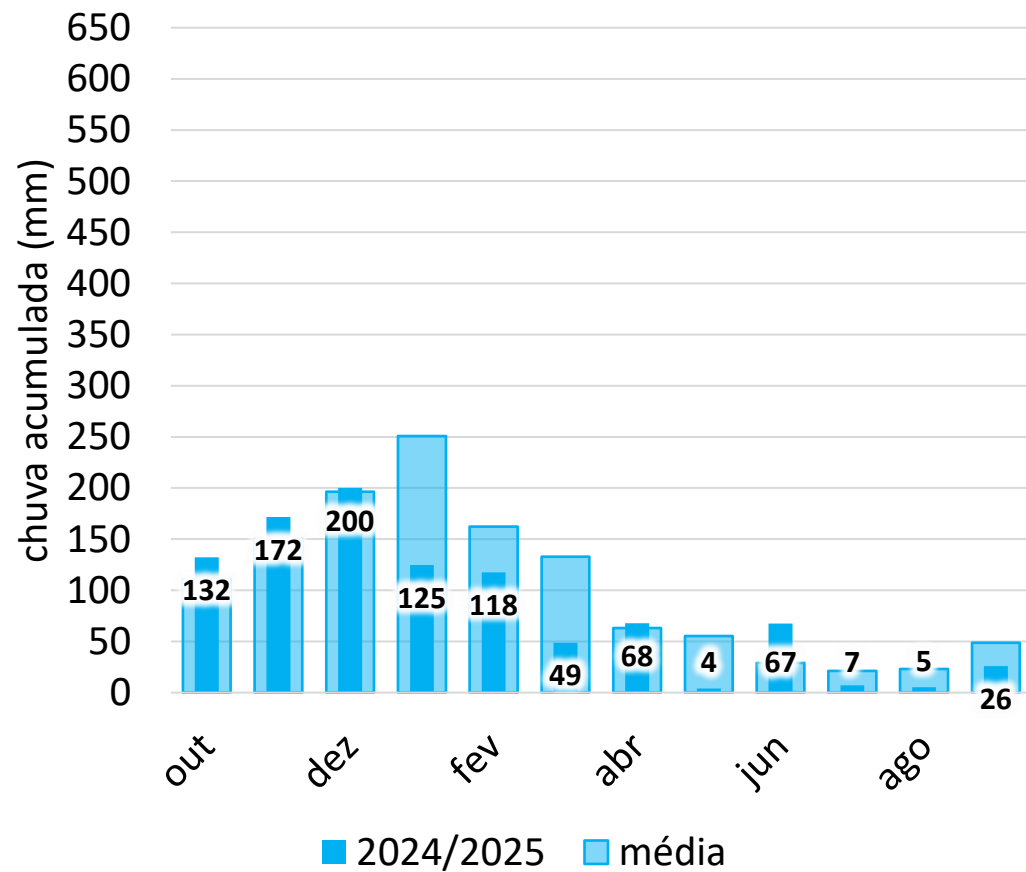




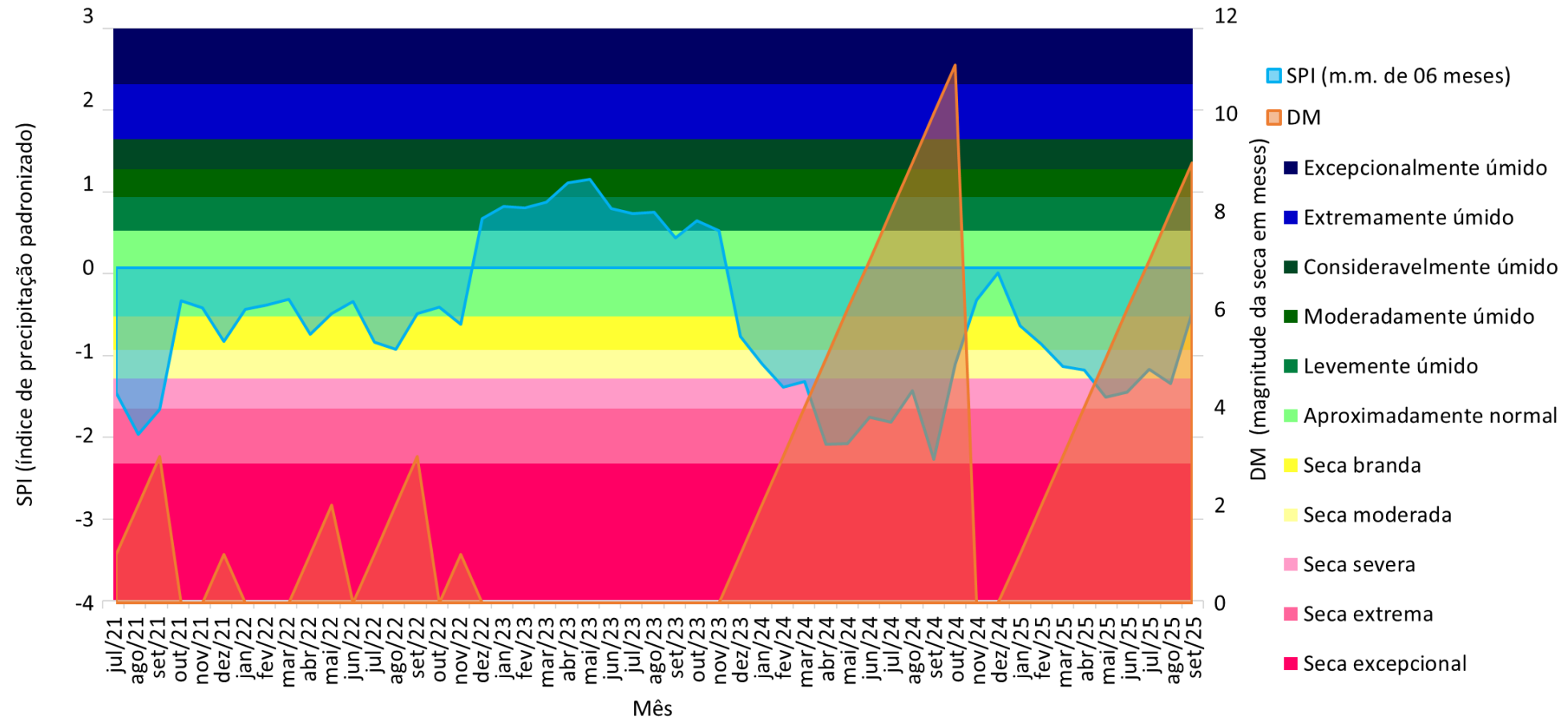
UGRHI 9 - Mogi-Guaçu



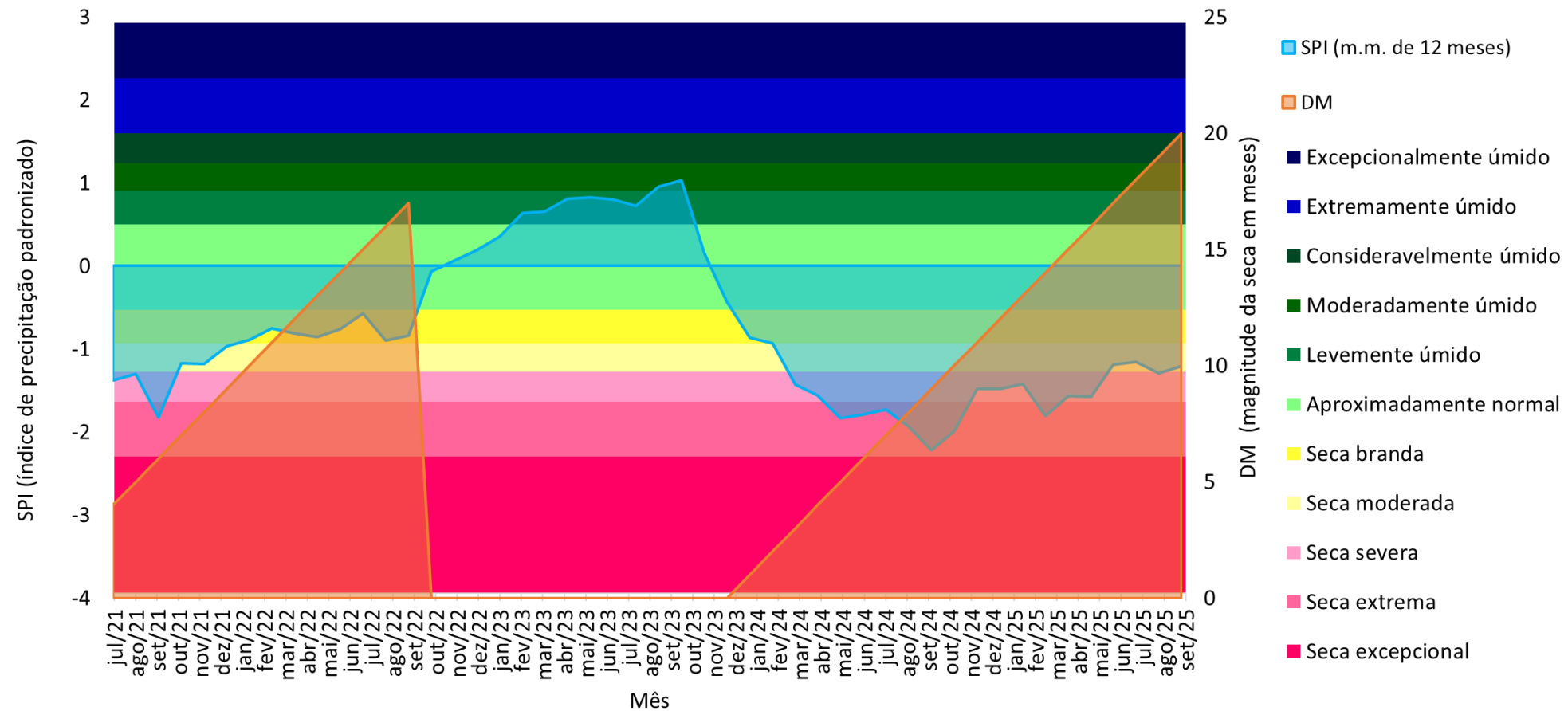
UGRHI 9 - Mogi-Guaçu



UGRHI 9 - Mogi-Guaçu | SPI-06

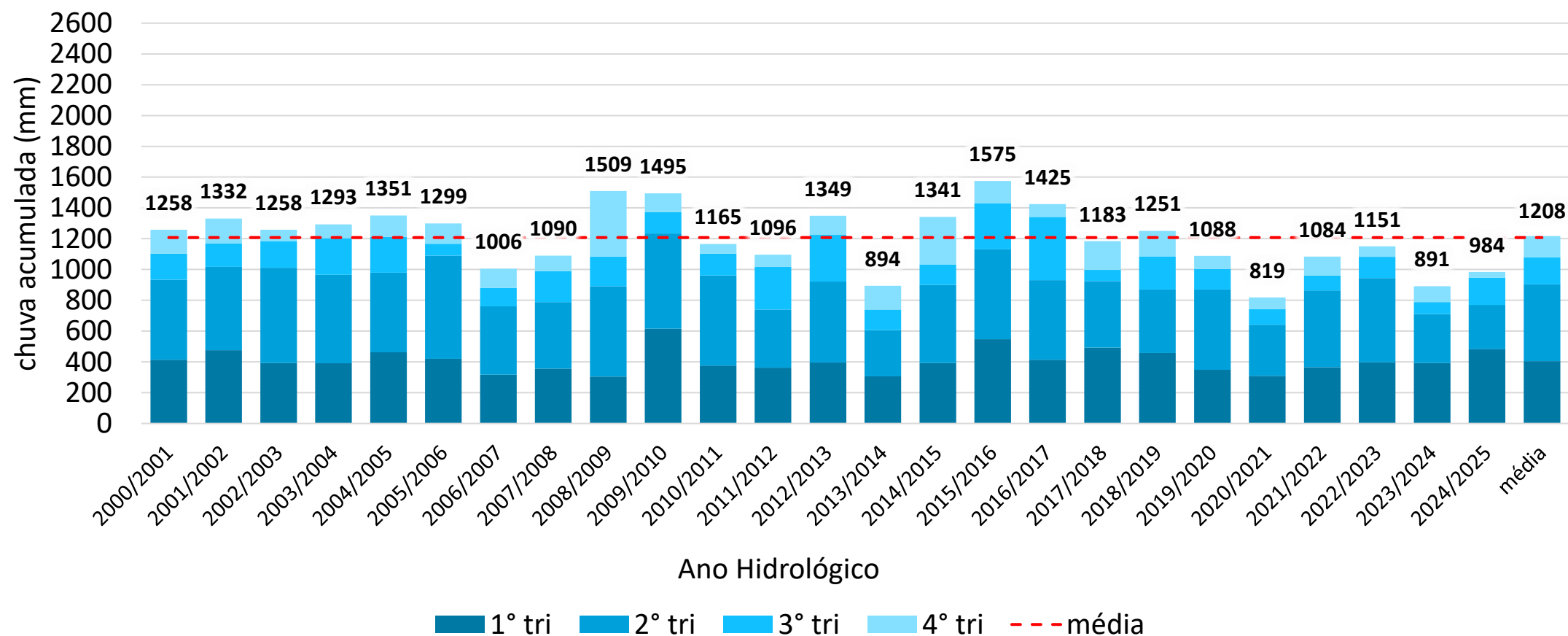


UGRHI 9 - Mogi-Guaçu | SPI-12

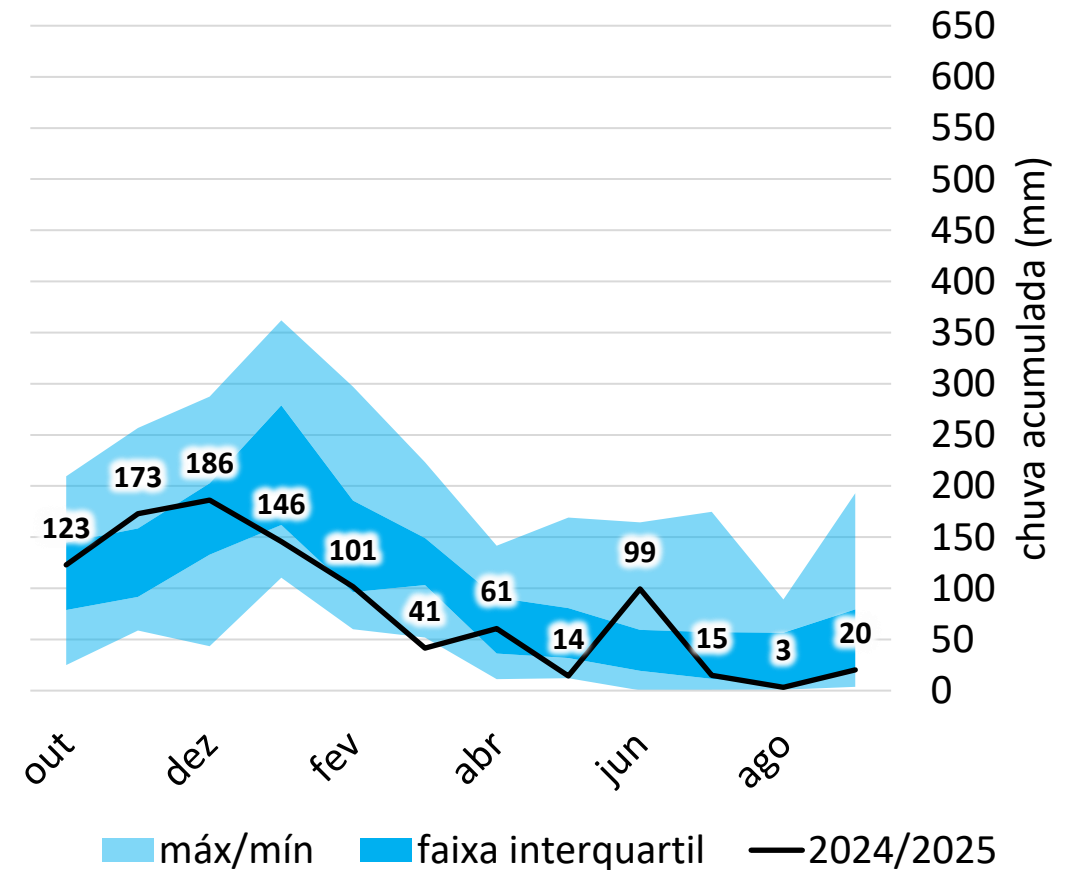
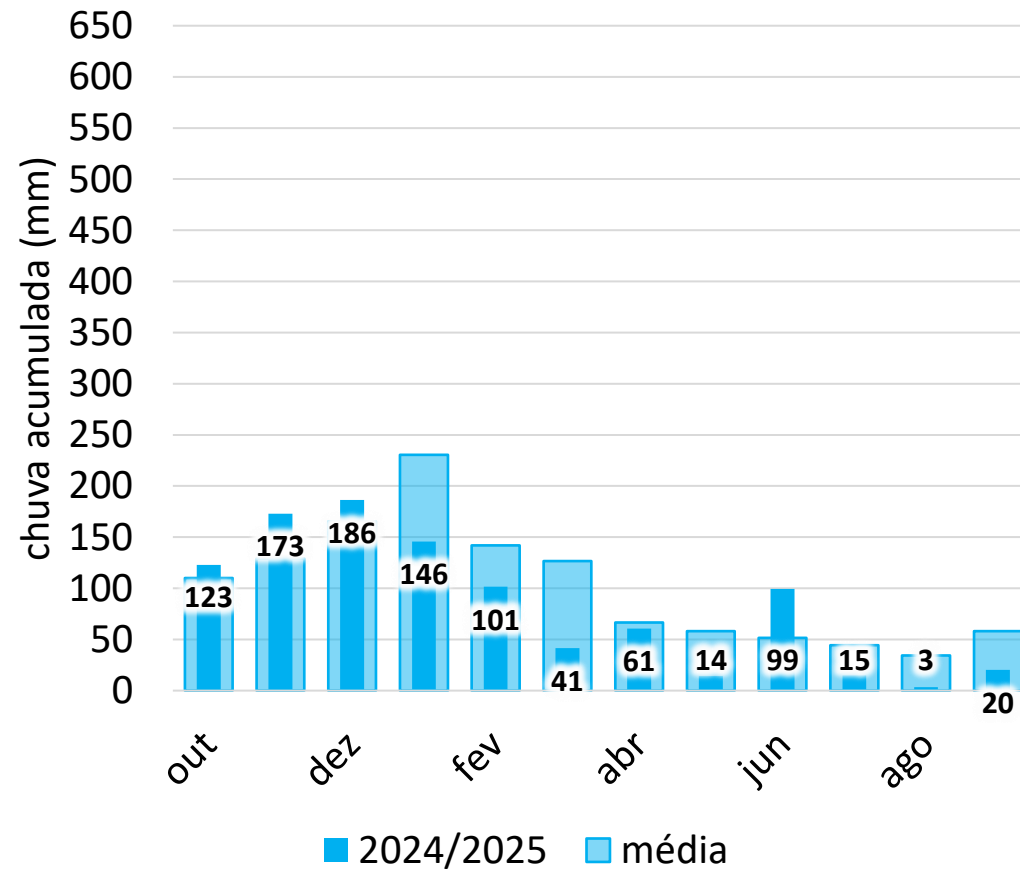




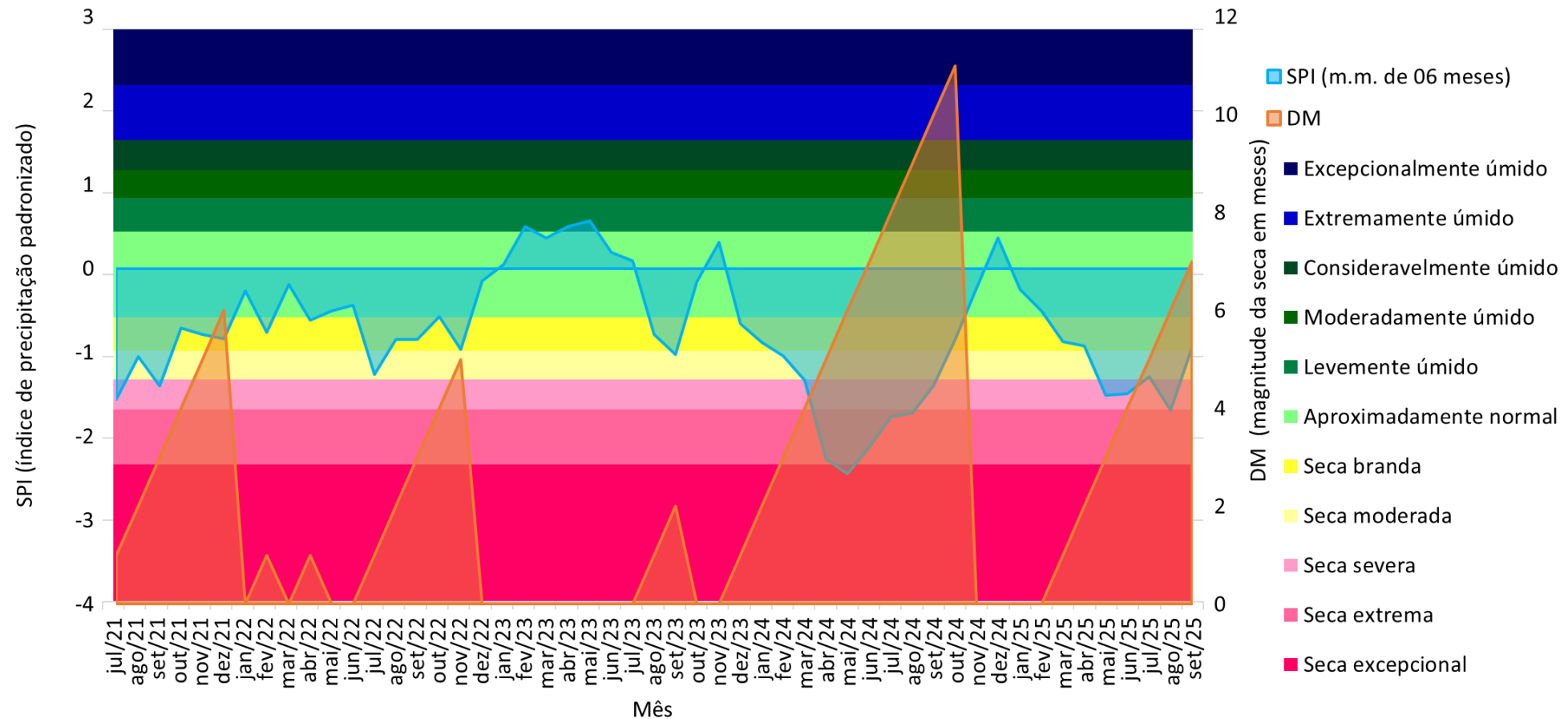
UGRHI 10 - Tietê/Sorocaba



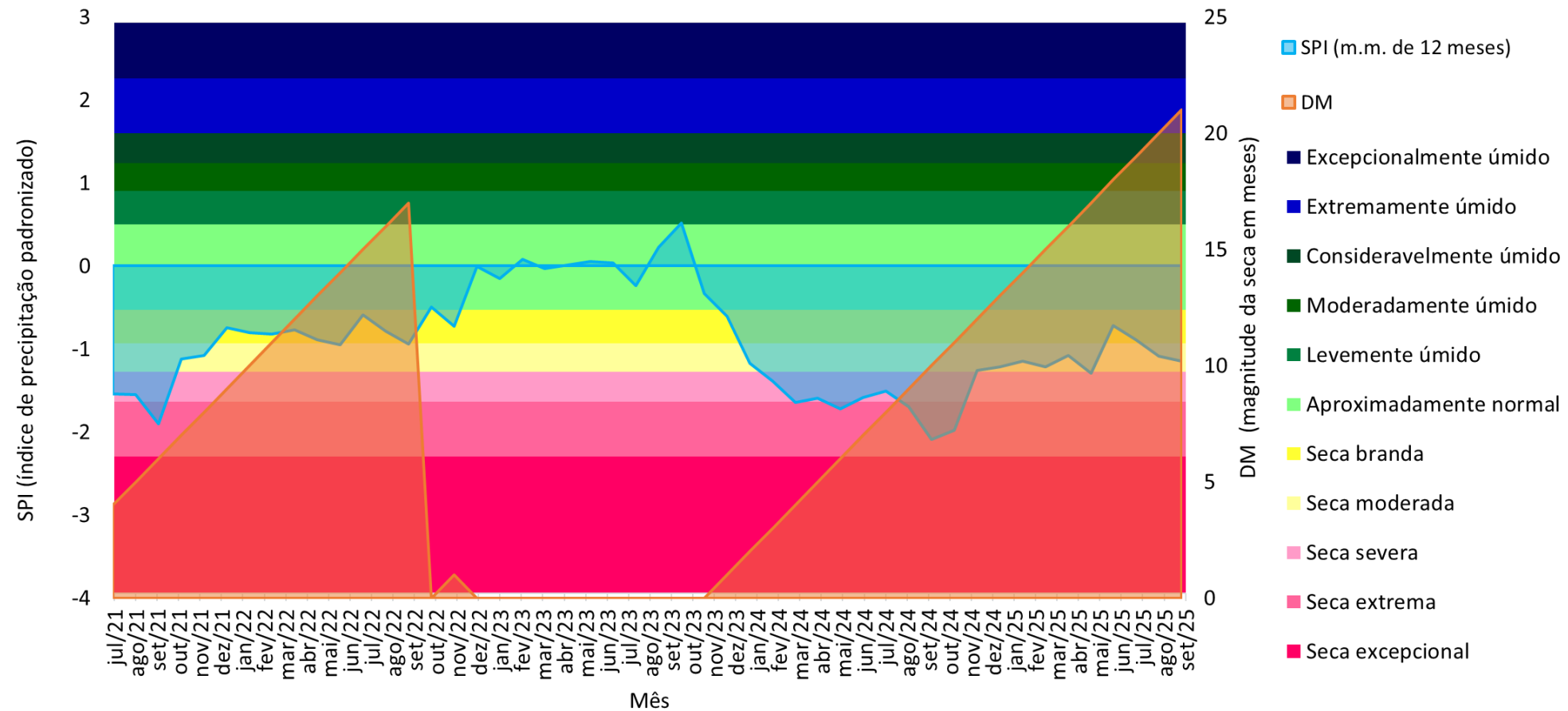
UGRHI 10 - Tietê/Sorocaba



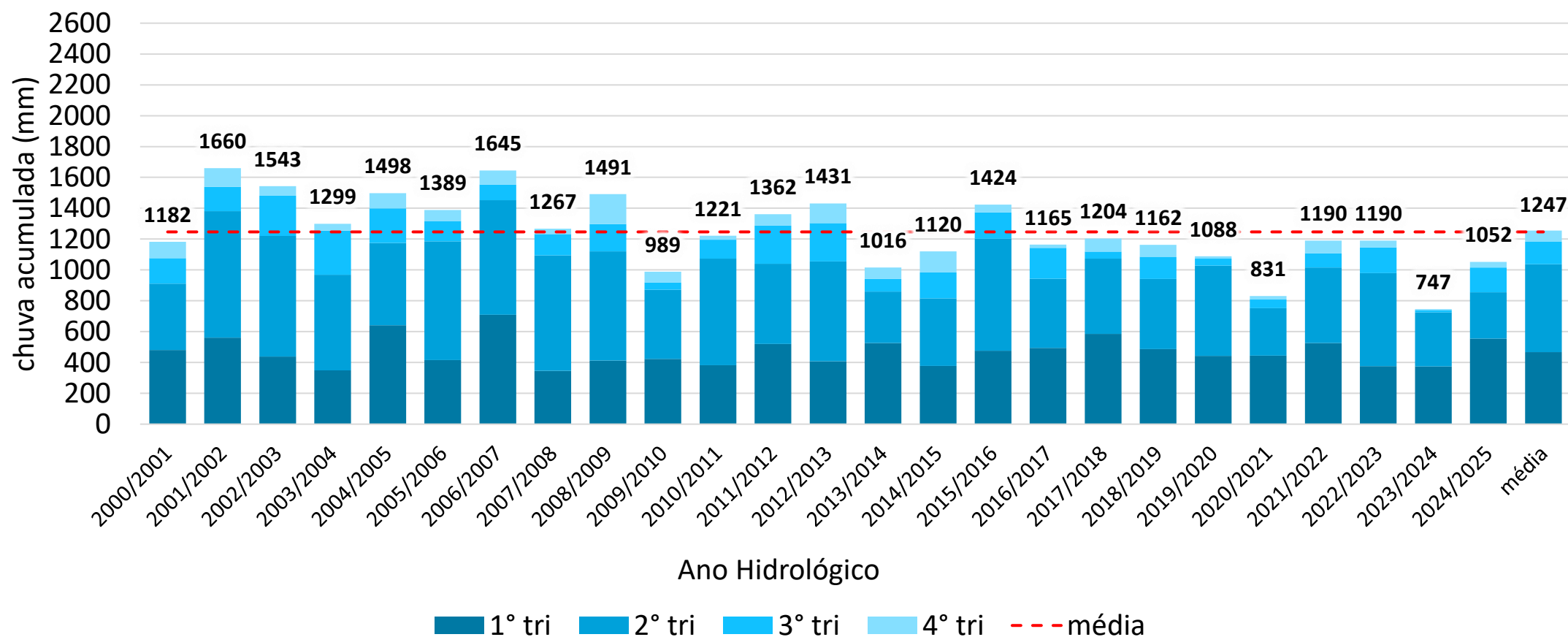
UGRHI 10 - Tietê/Sorocaba | SPI-06



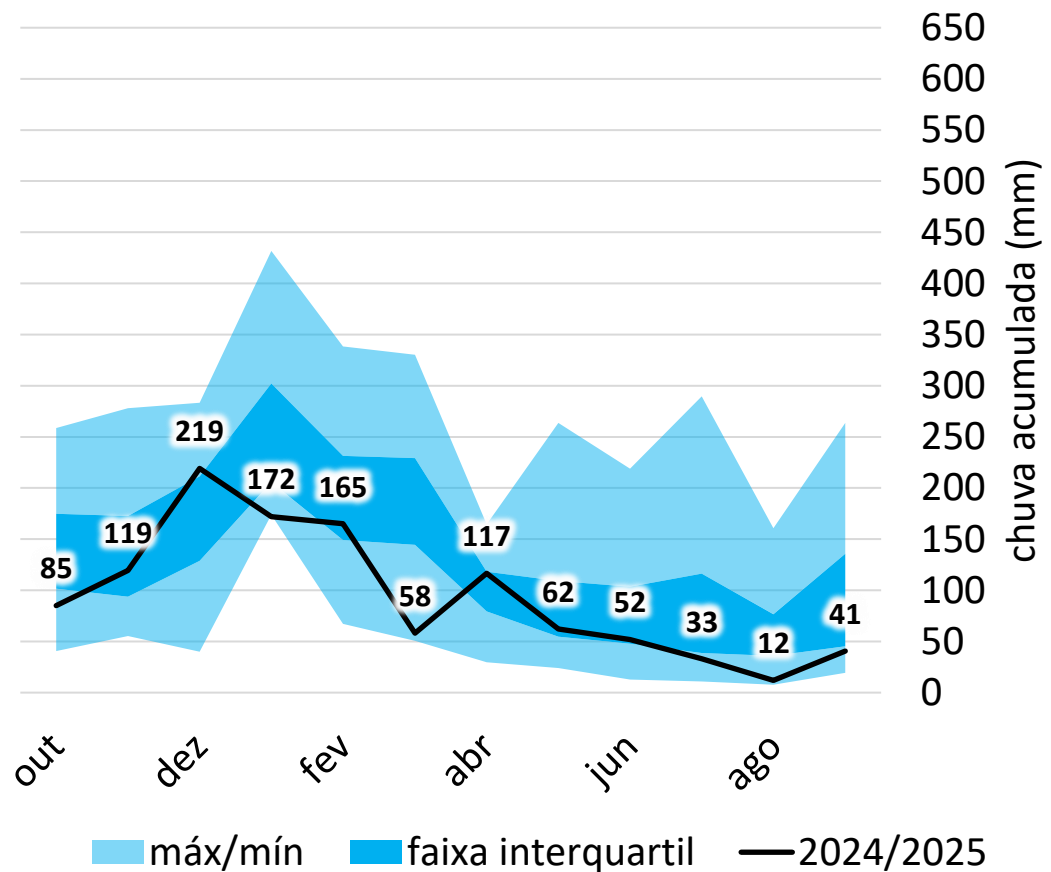
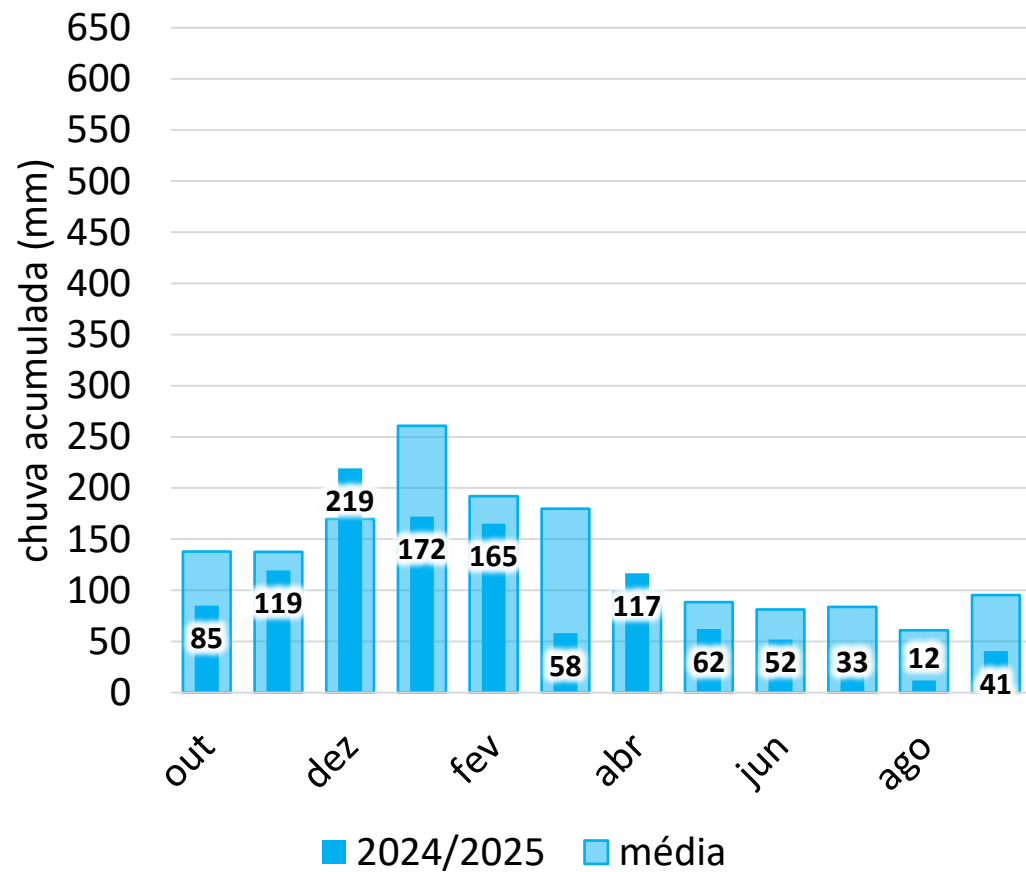
UGRHI 10 - Tietê/Sorocaba | SPI-12



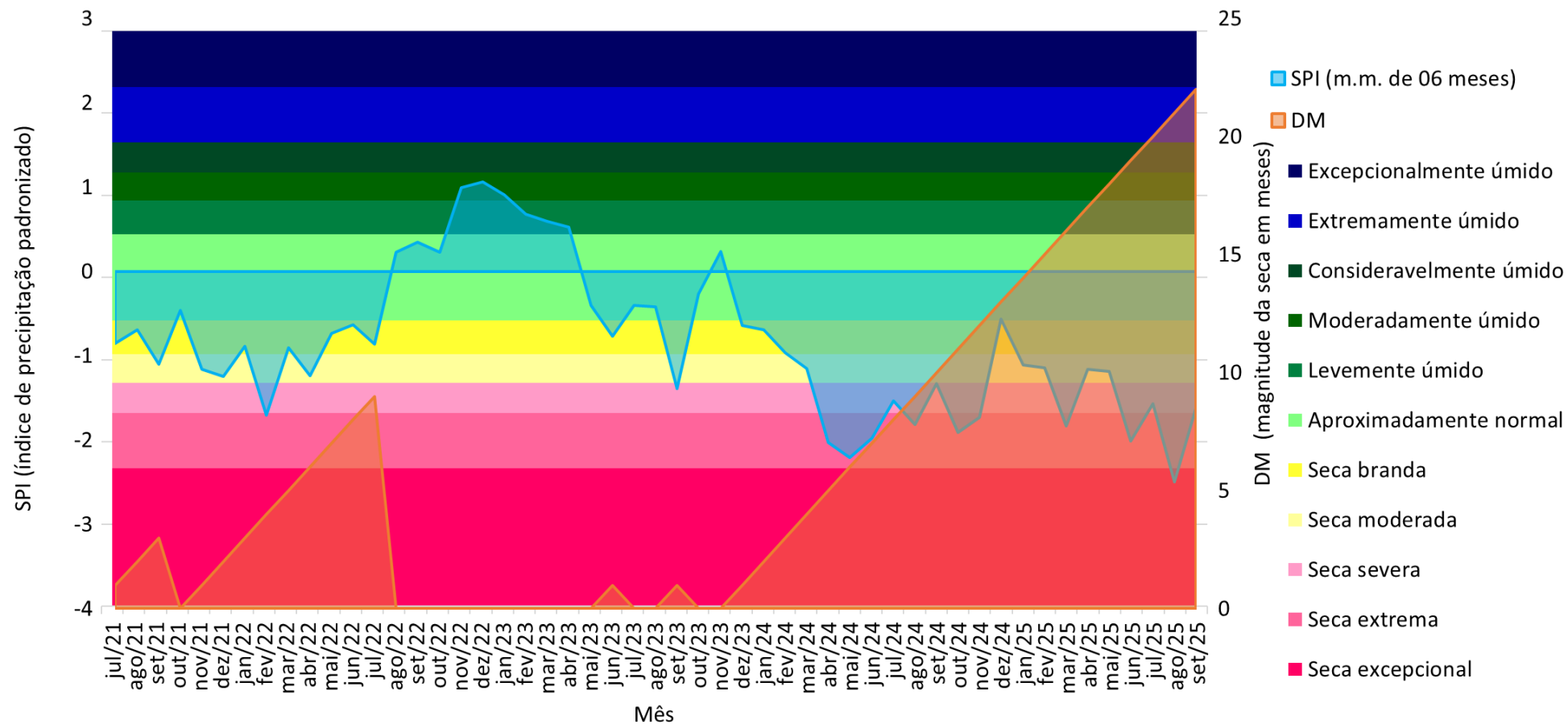
UGRHI 11 - Ribeira de Iguape/Litoral Sul



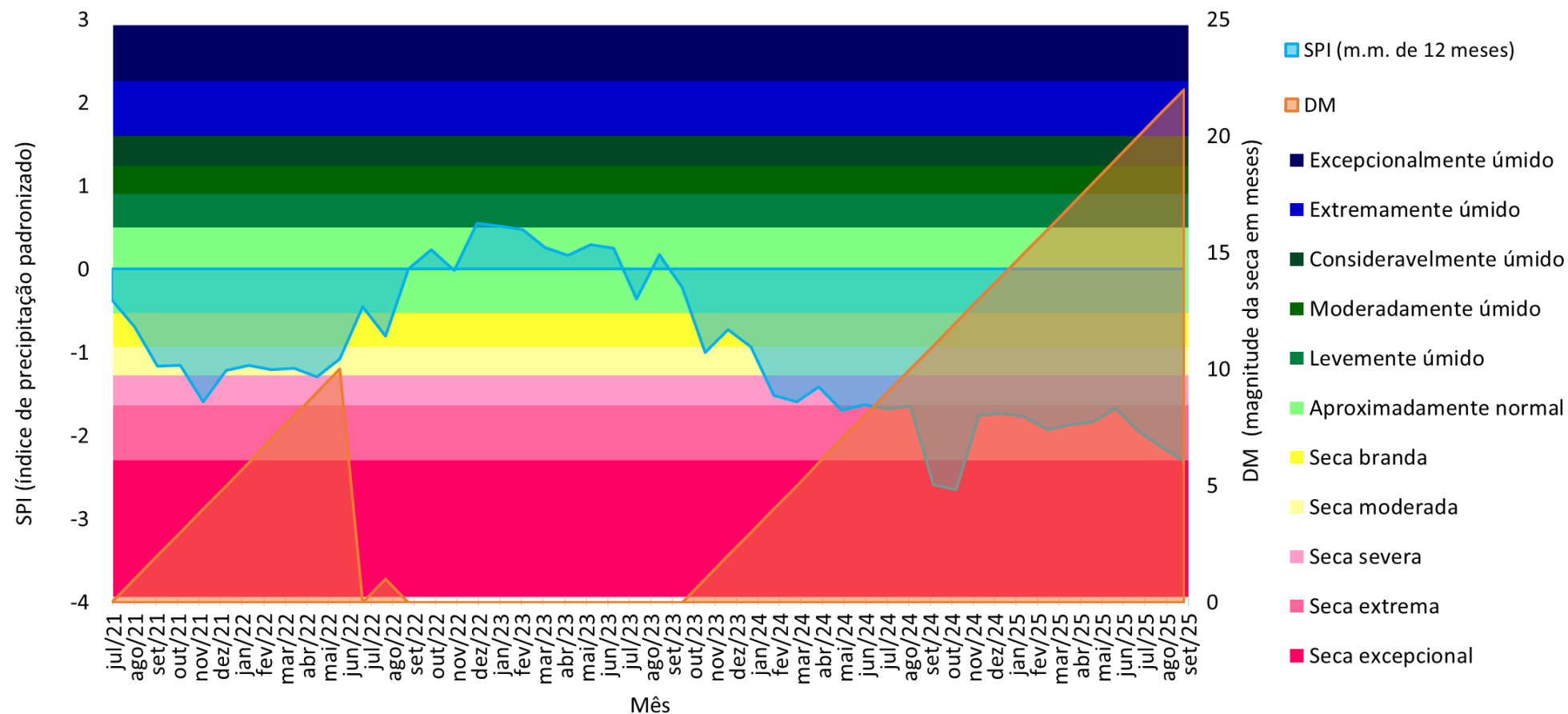
UGRHI 11 - Ribeira de Iguape/Litoral Sul



UGRHI 11 Ribeira de Iguape/Litoral Sul | SPI-06

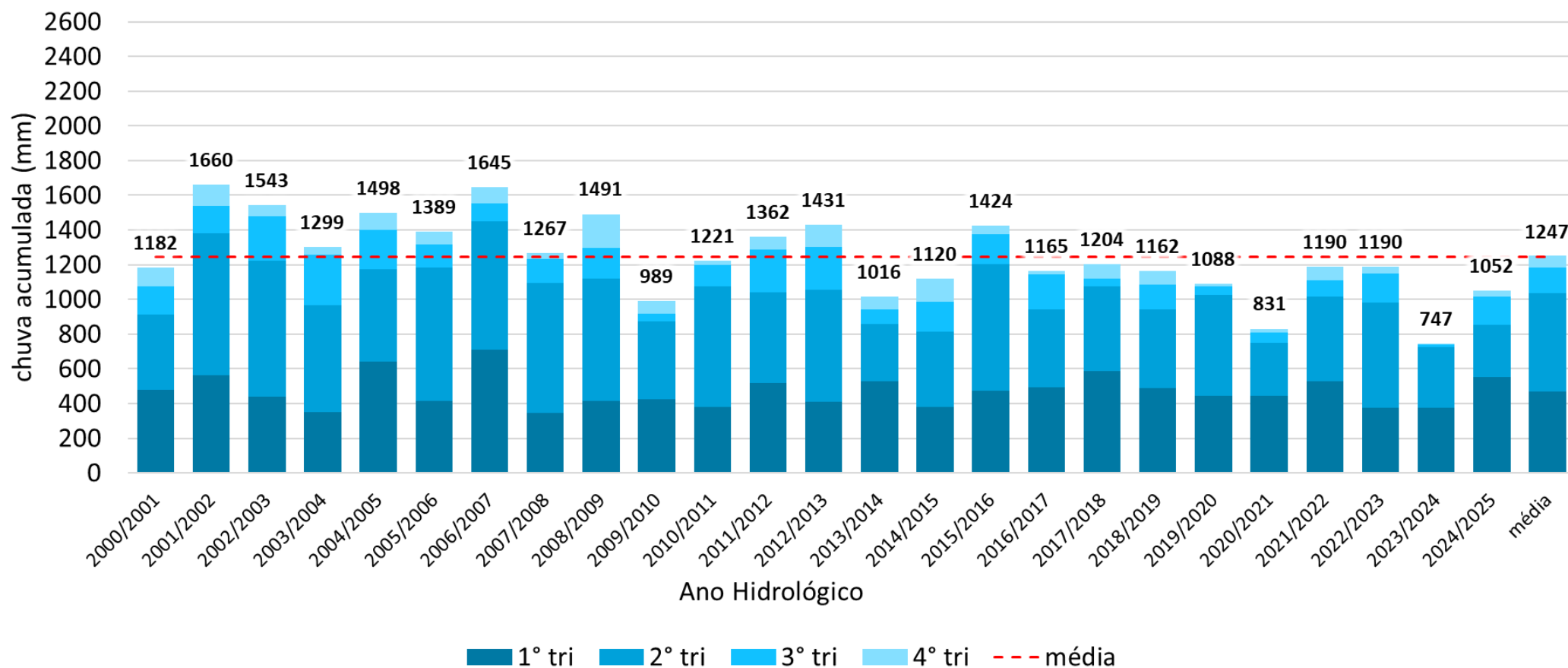


UGRHI 11 Ribeira de Iguape/Litoral Sul | SPI-12

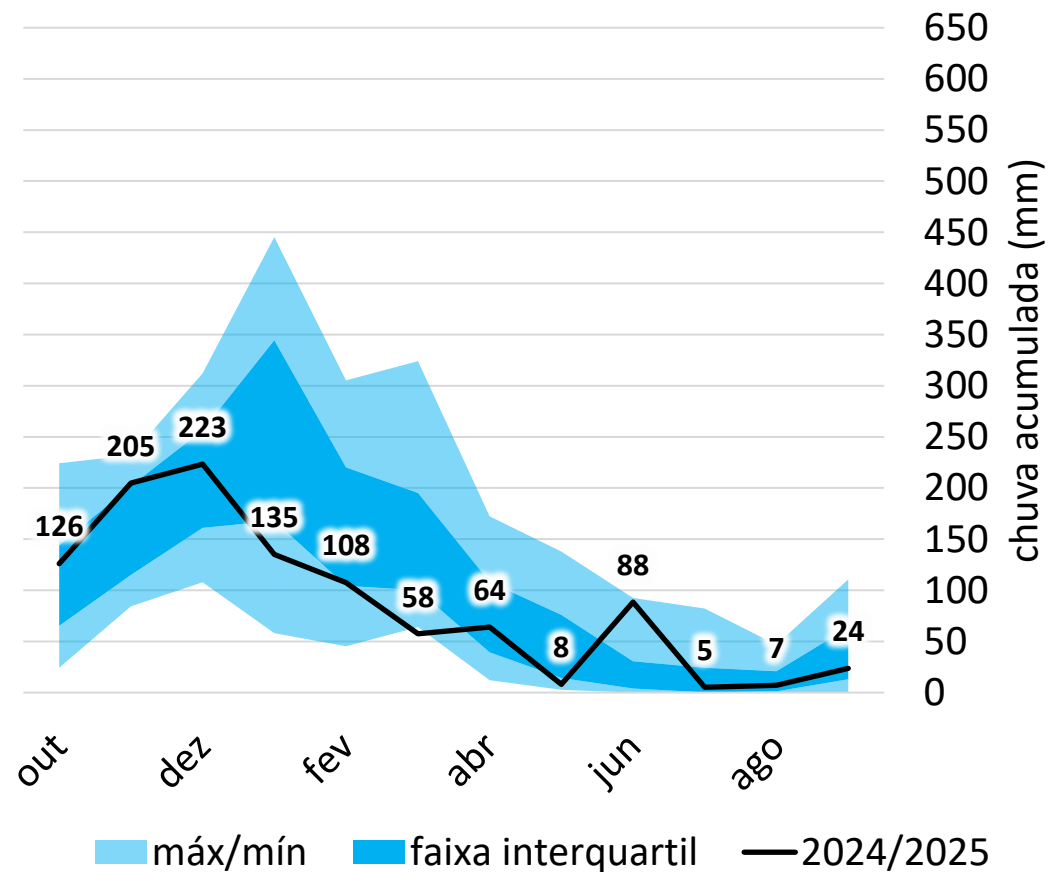
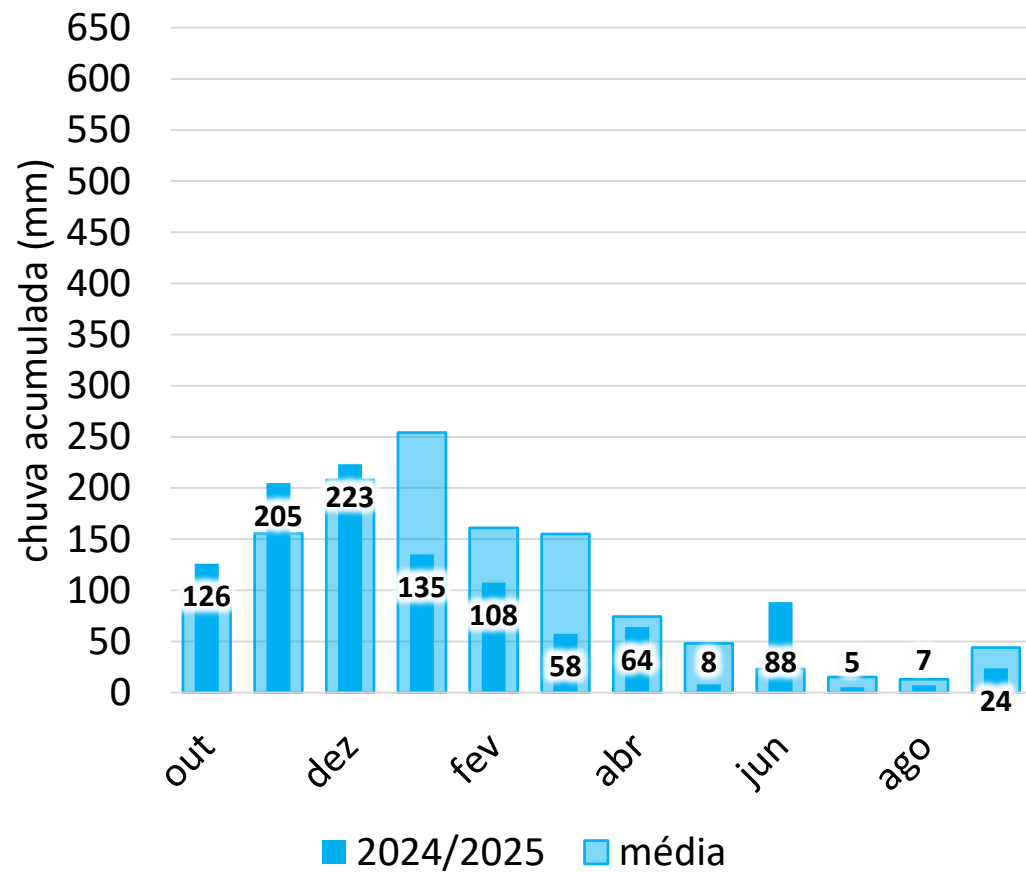
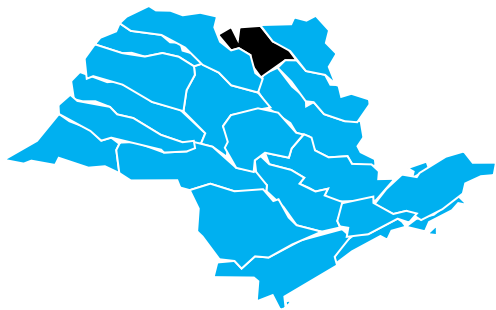




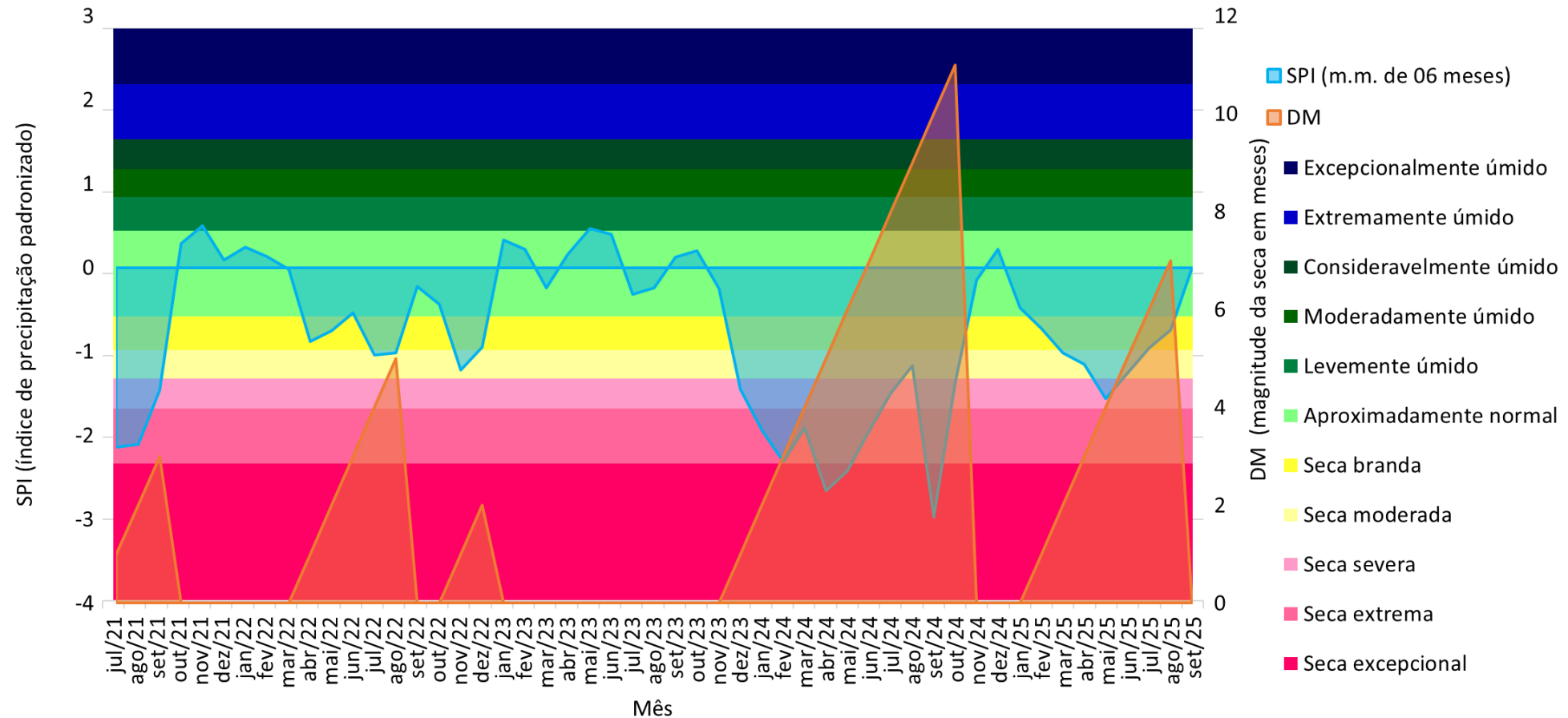
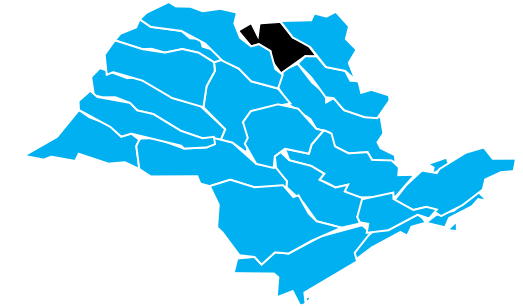
UGRHI 12 - Baixo Pardo/Grande



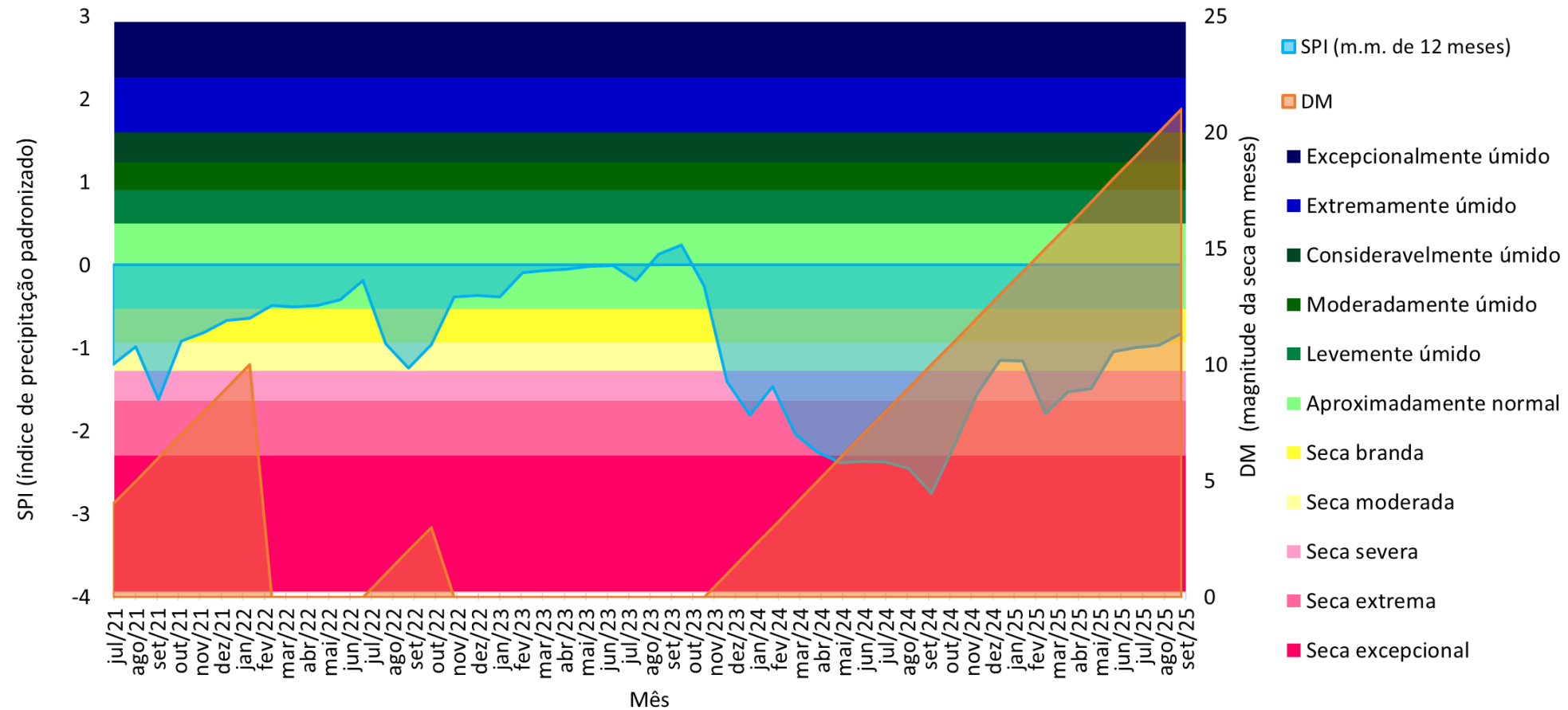
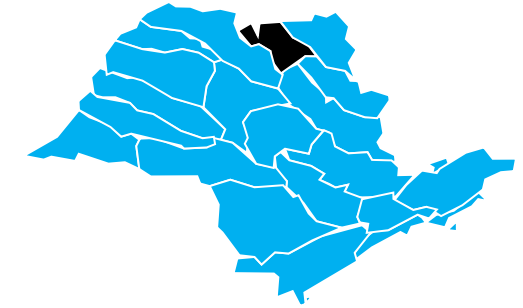
UGRHI 12 - Baixo Pardo/Grande



UGRHI 12 - Baixo Pardo/Grande | SPI-06

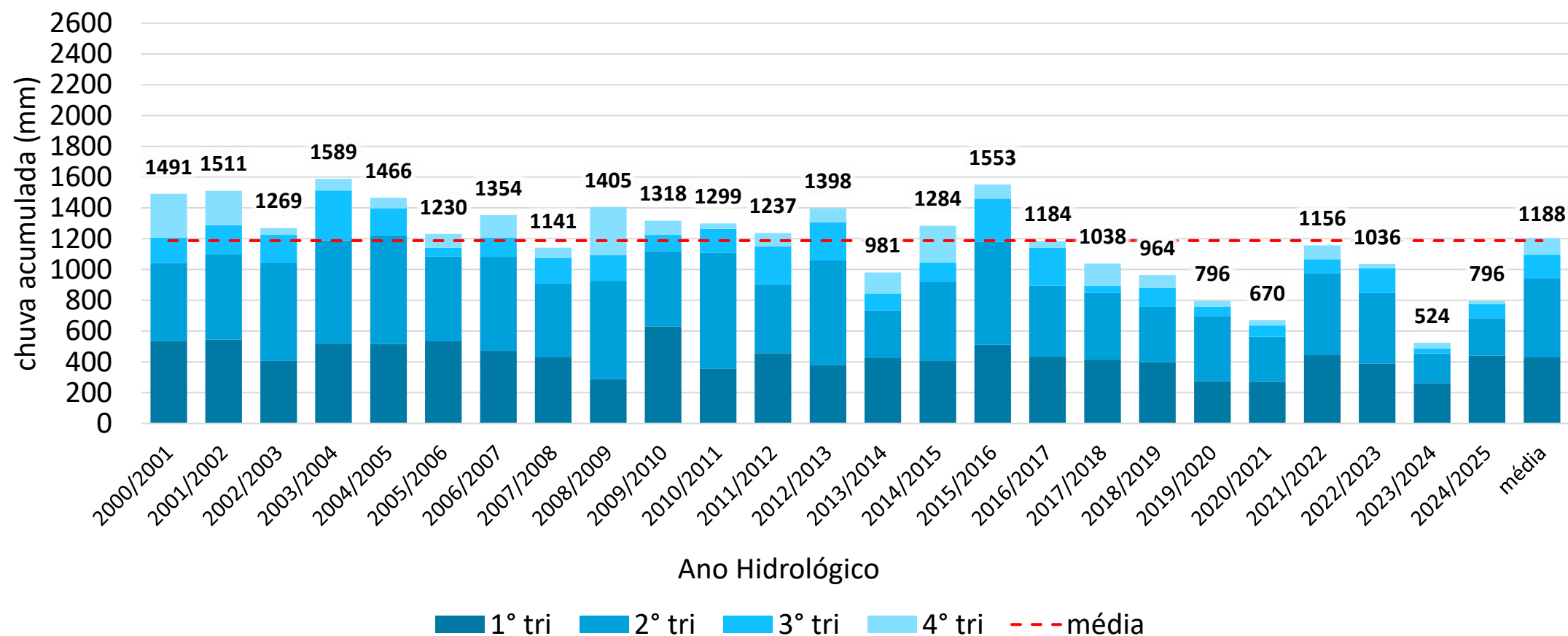


UGRHI 12 - Baixo Pardo/Grande | SPI-12

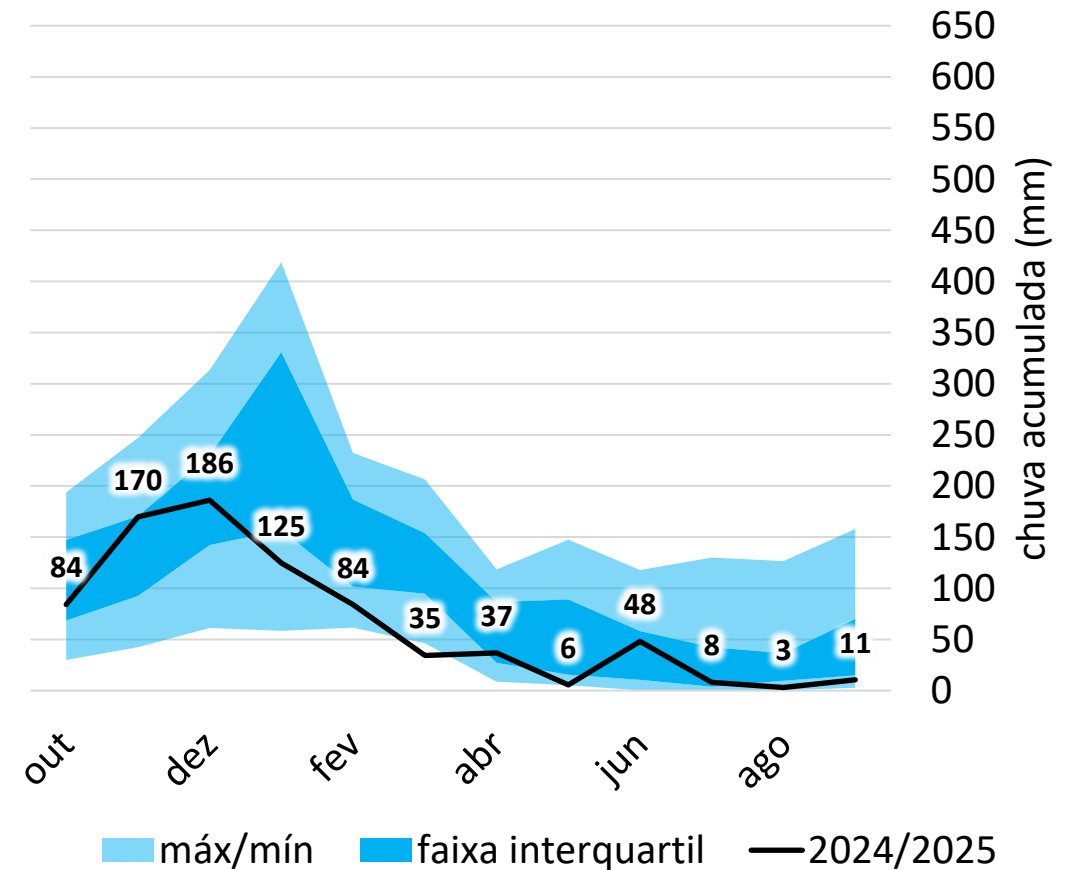
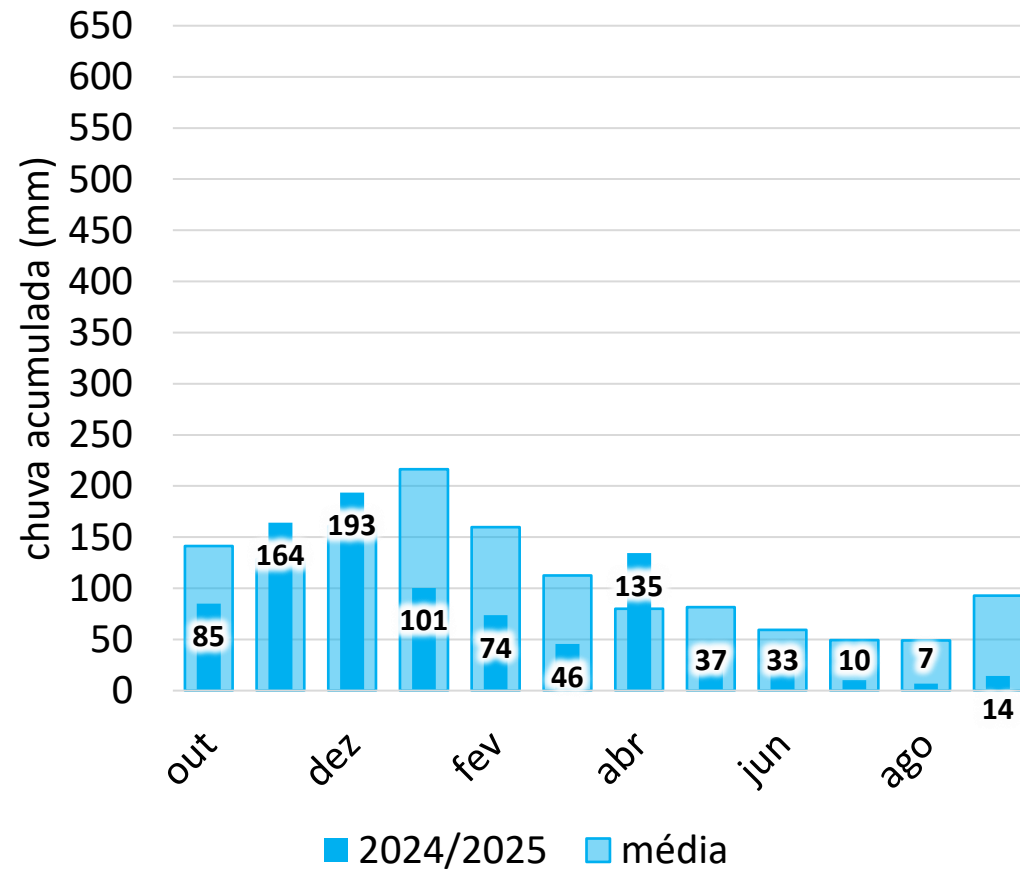




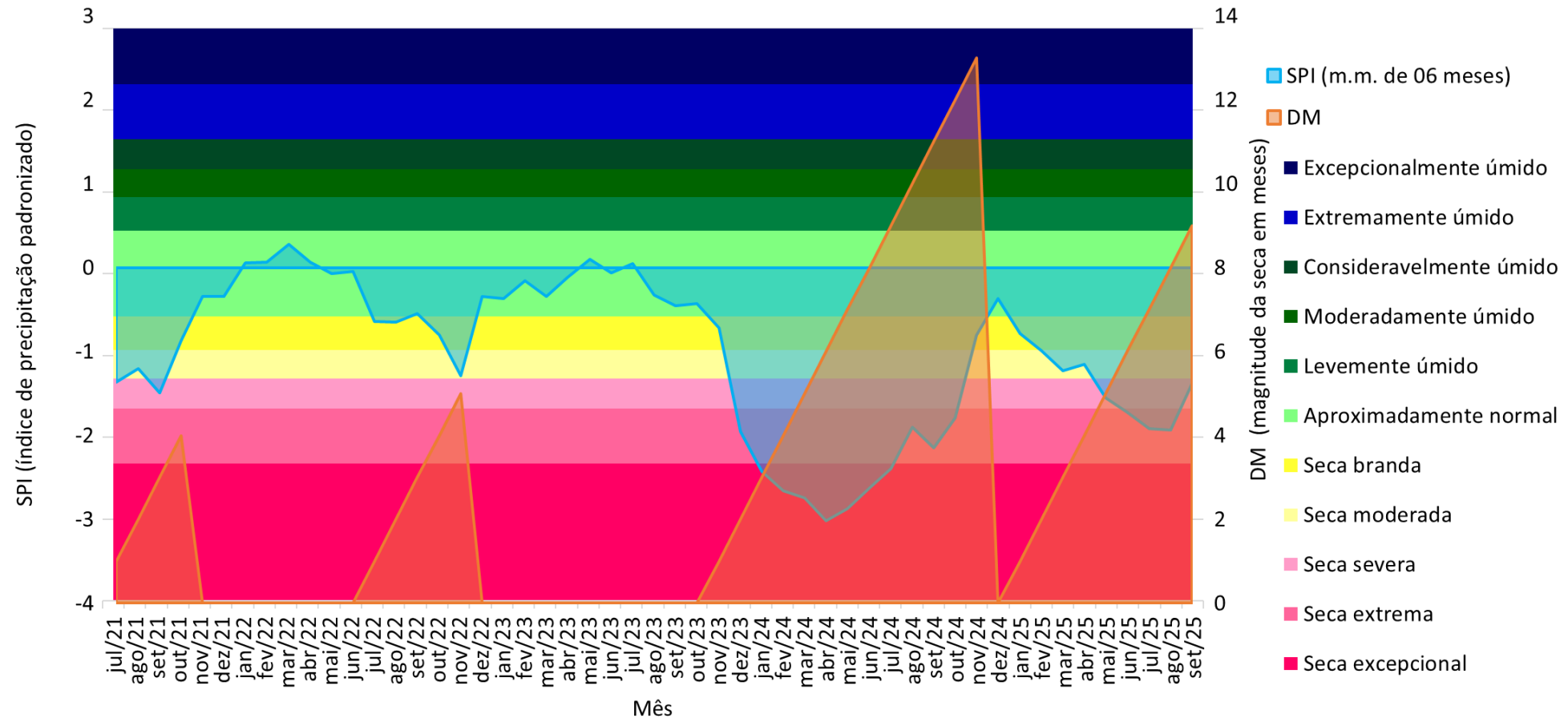
UGRHI 13 - Tietê/Jacararé



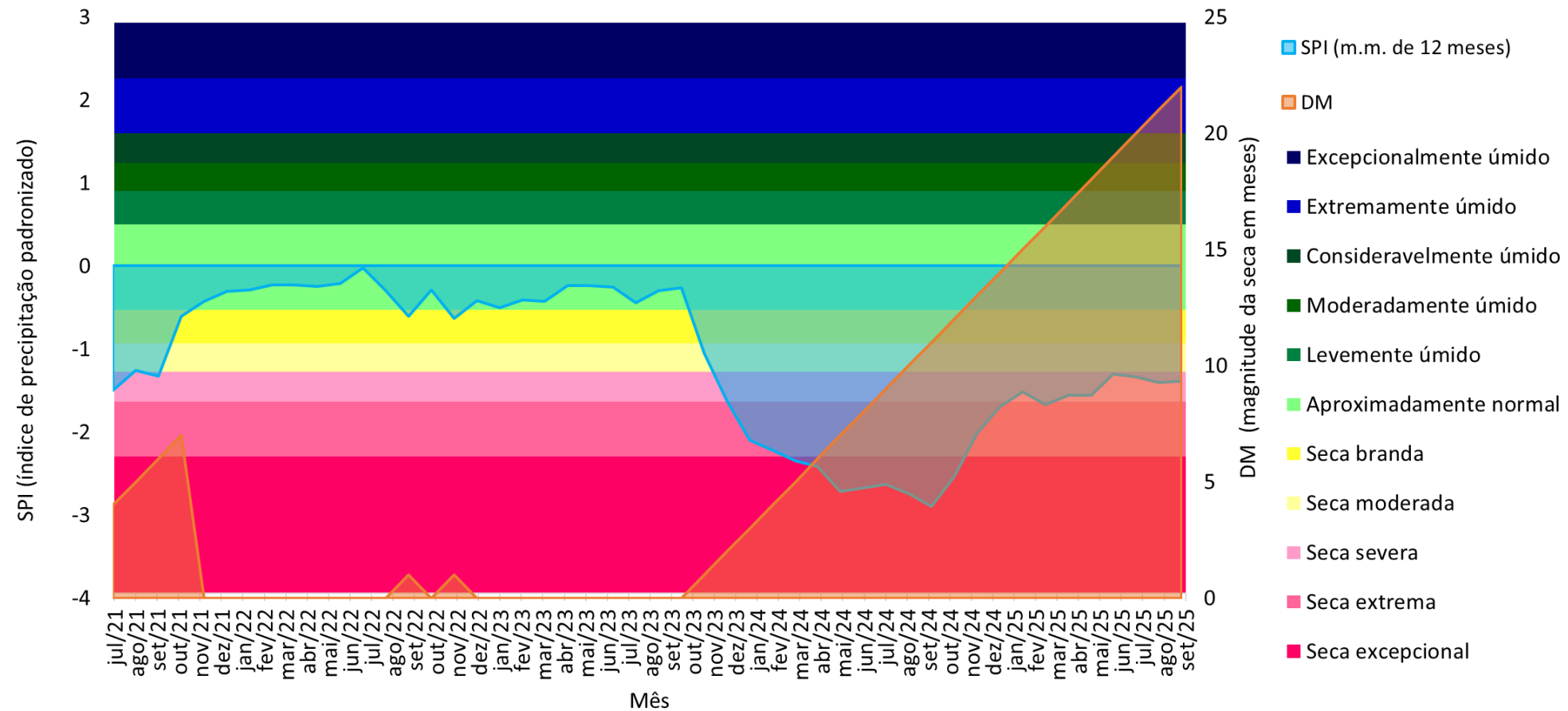
UGRHI 13 - Tietê/Jacararé



UGRHI 13 - Tietê/Jacararé | SPI-06

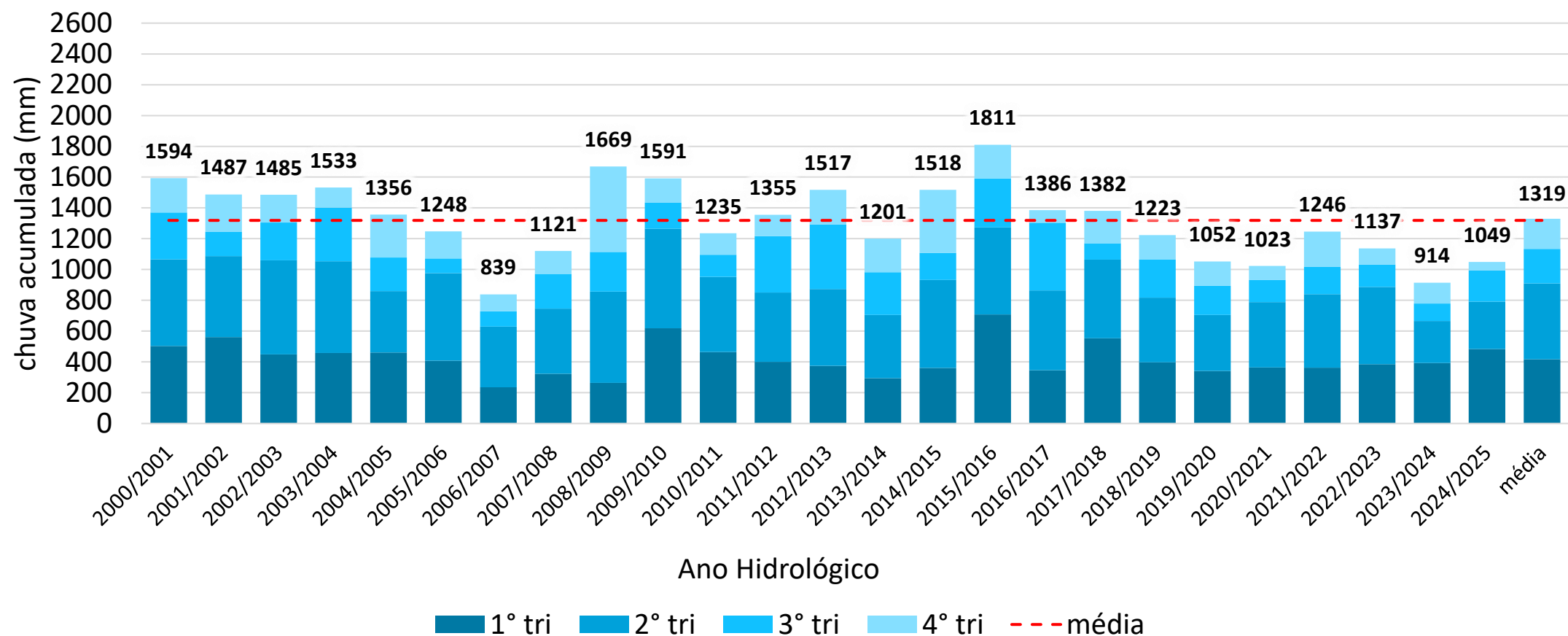


UGRHI 13 - Tietê/Jacararé | SPI-12

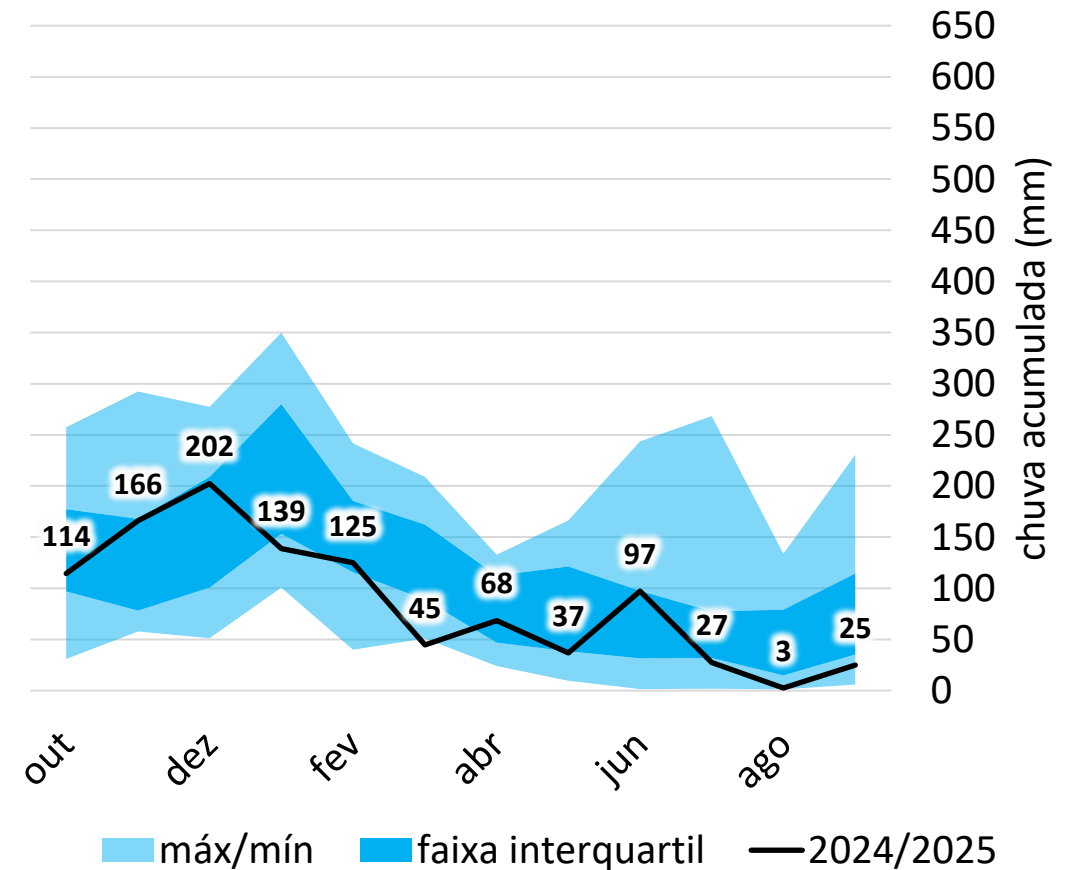
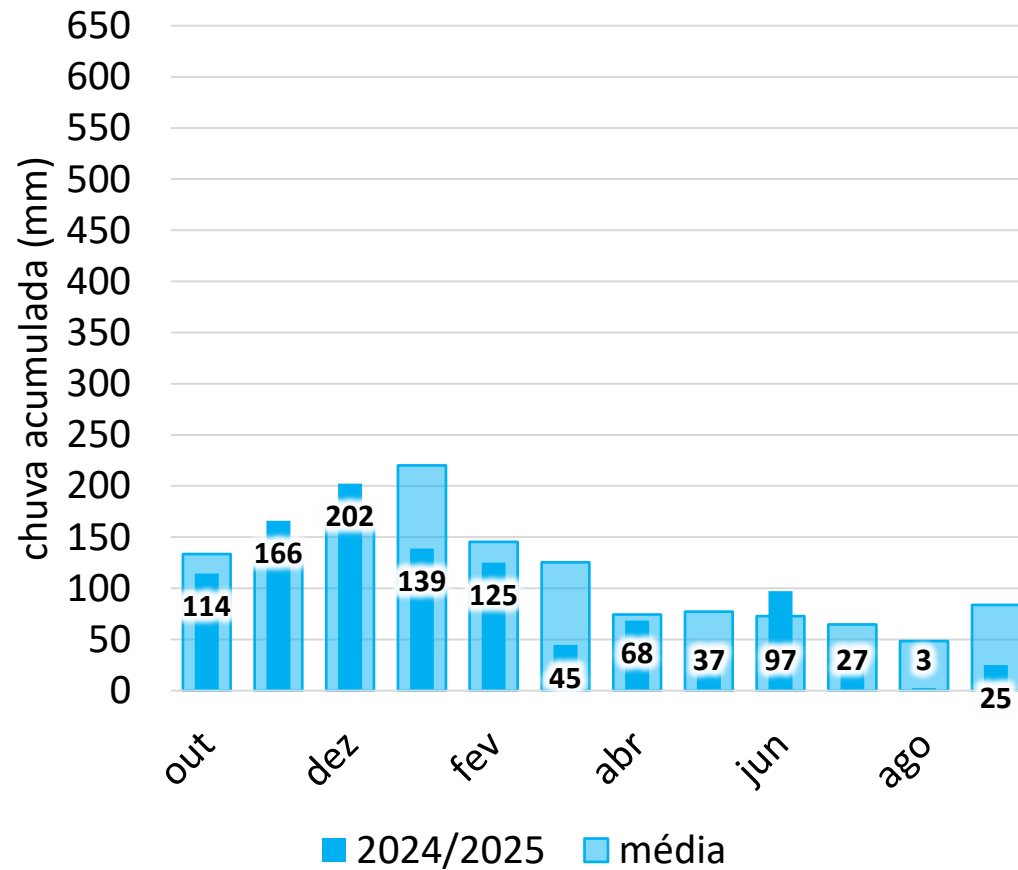




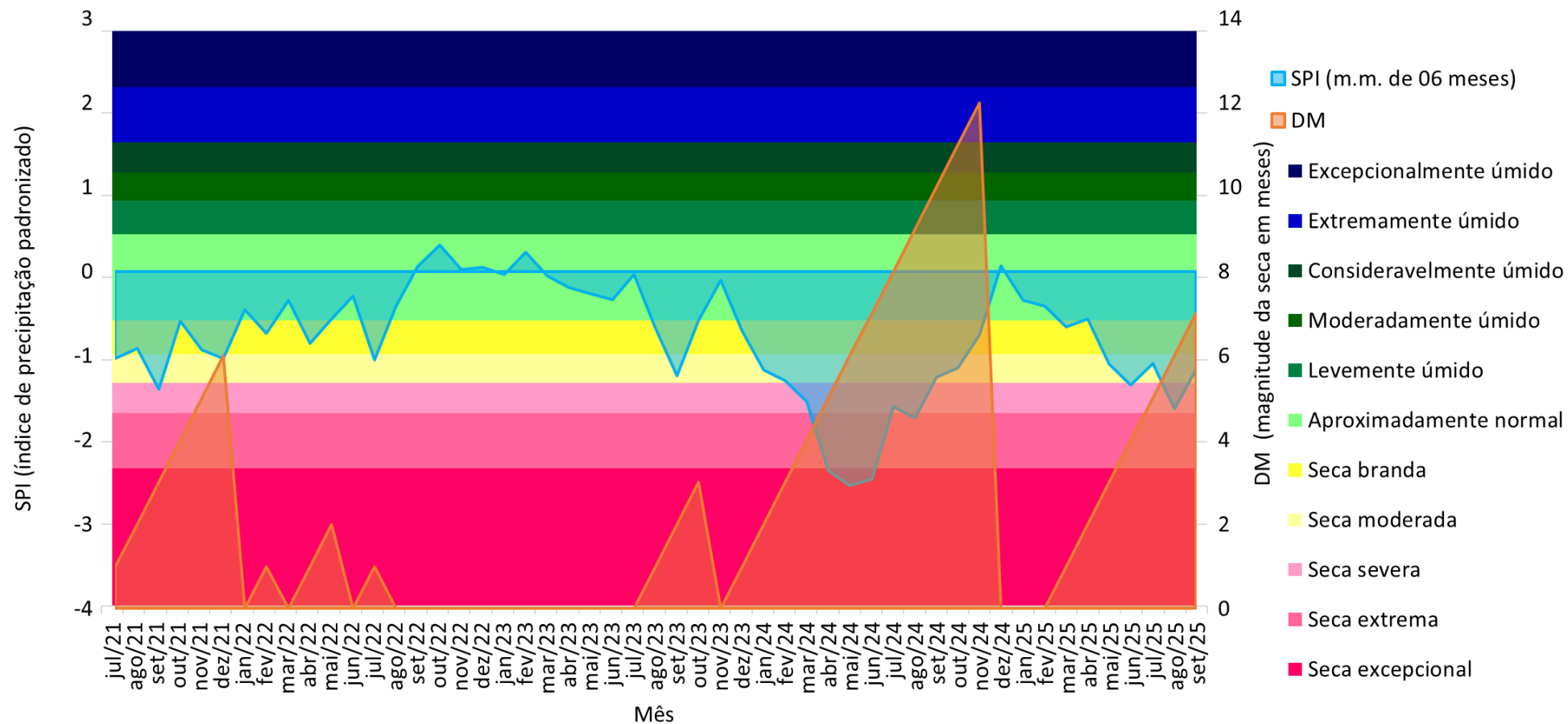
UGRHI 14 - Alto Paranapanema



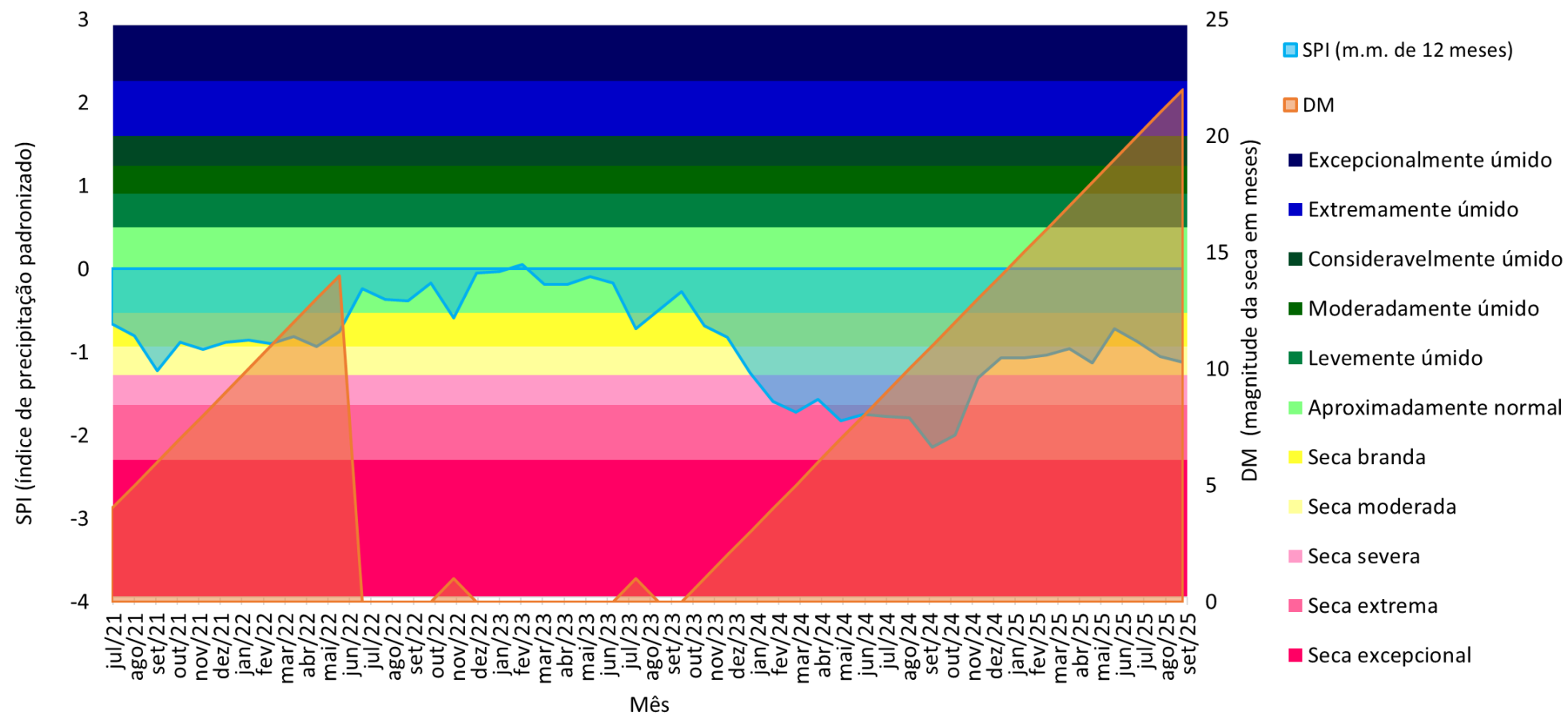
UGRHI 14 - Alto Paranapanema



UGRHI 14 - Alto Paranapanema | SPI-06

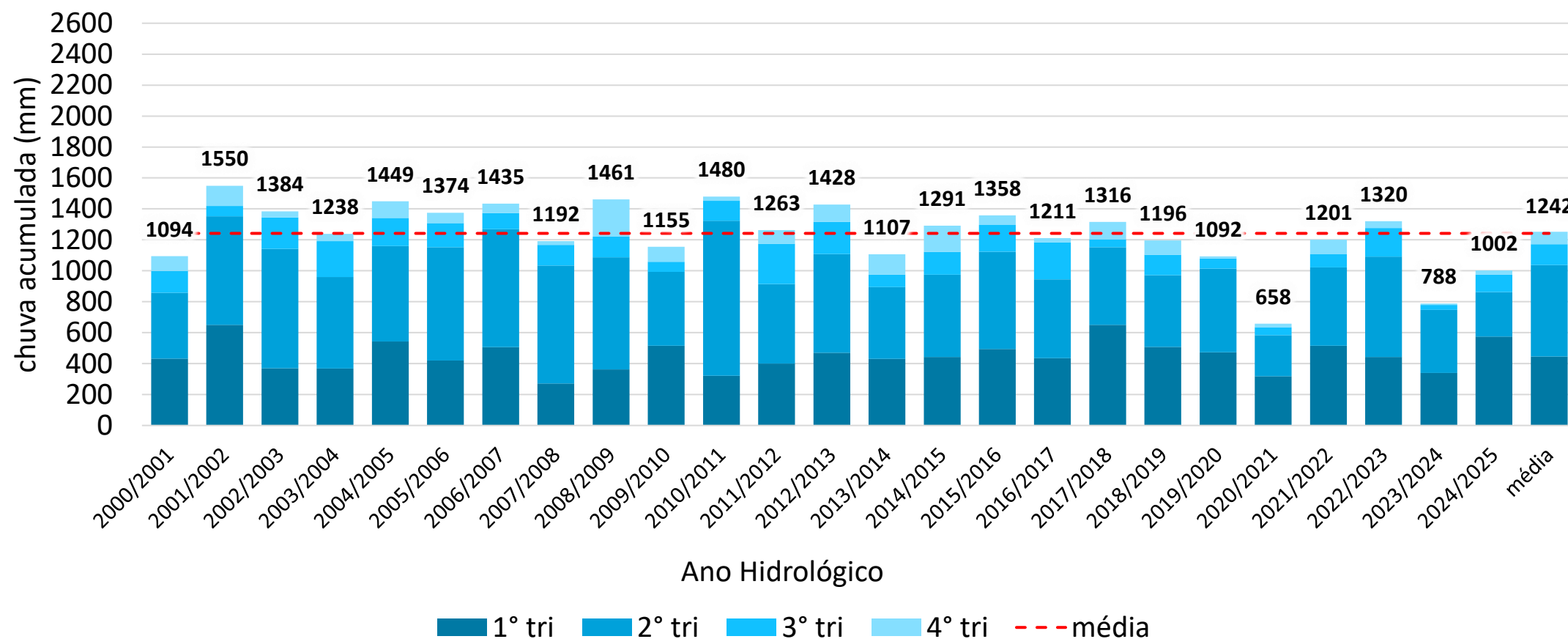


UGRHI 14 - Alto Paranapanema | SPI-12

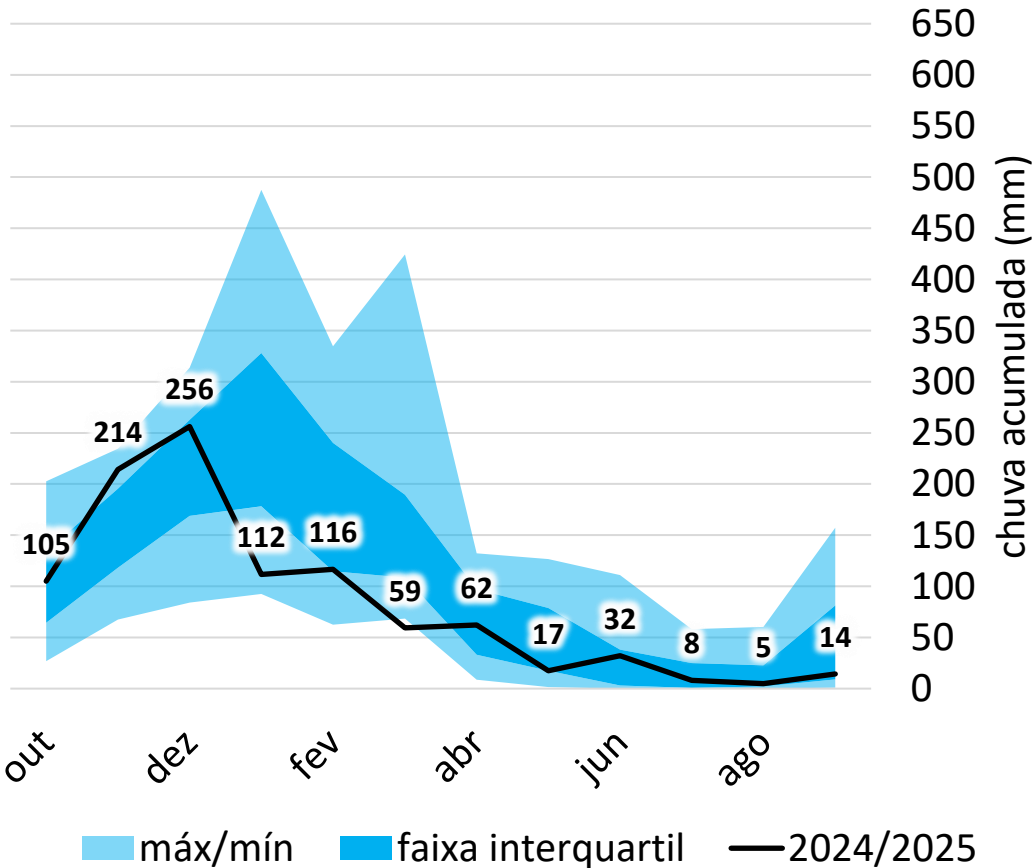
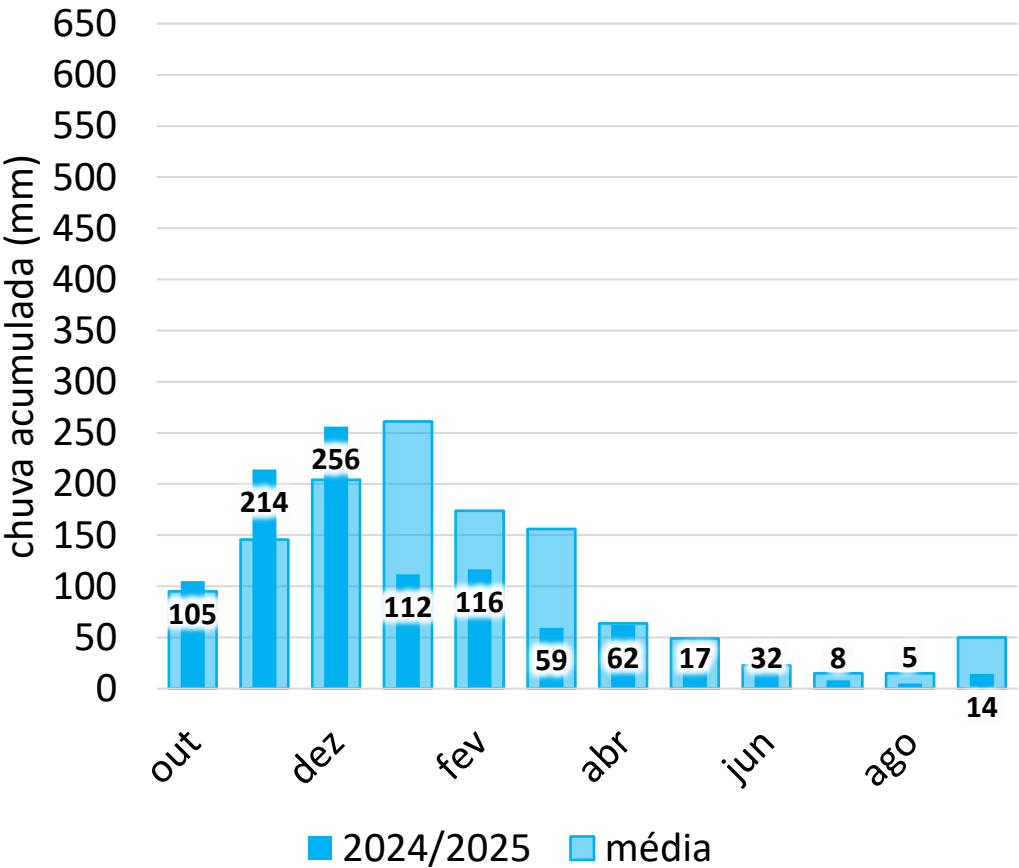




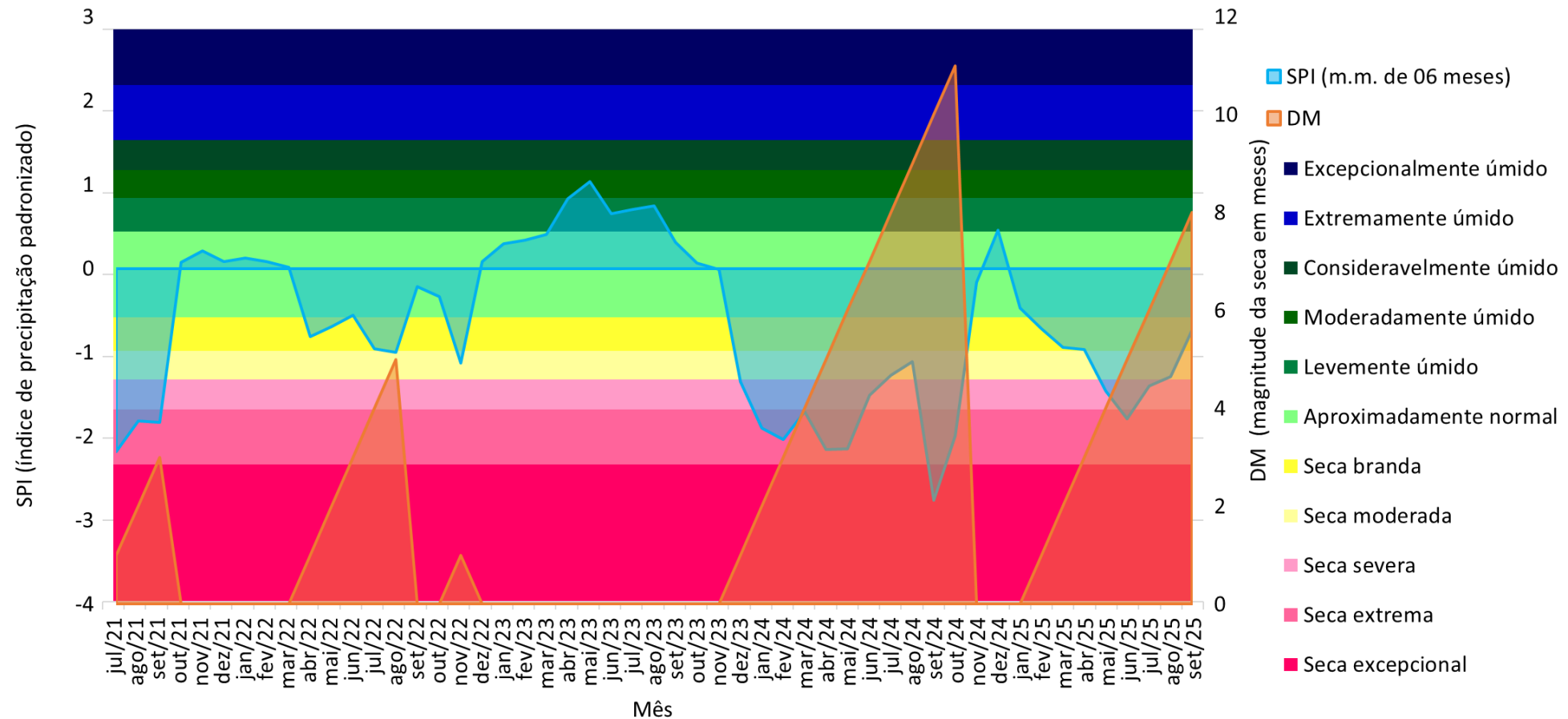
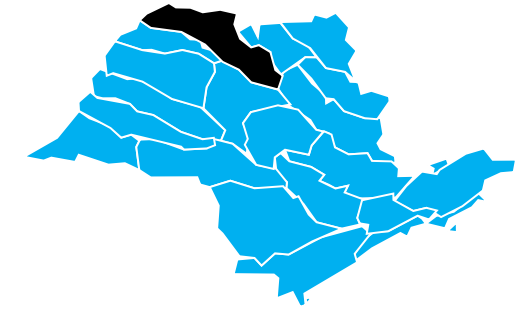
UGRHI 15 - Turvo/Grande



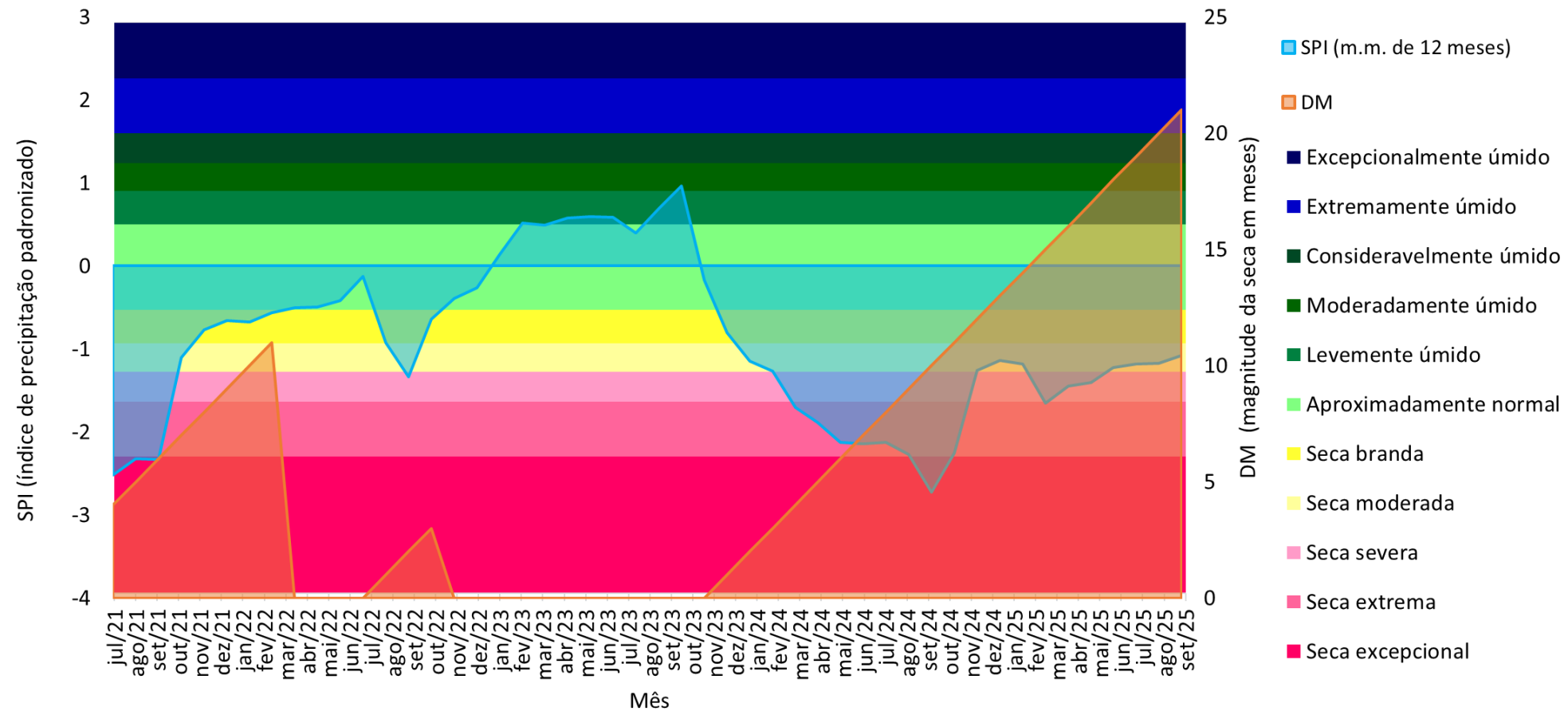
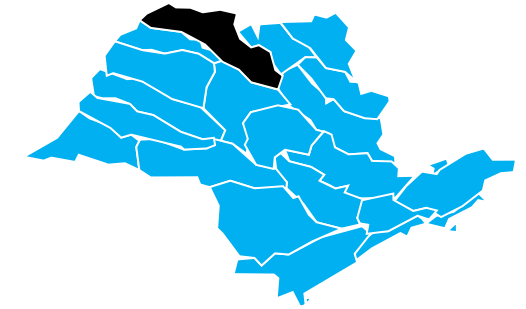
UGRHI 15 - Turvo/Grande



UGRHI 15 - Turvo/Grande | SPI-06

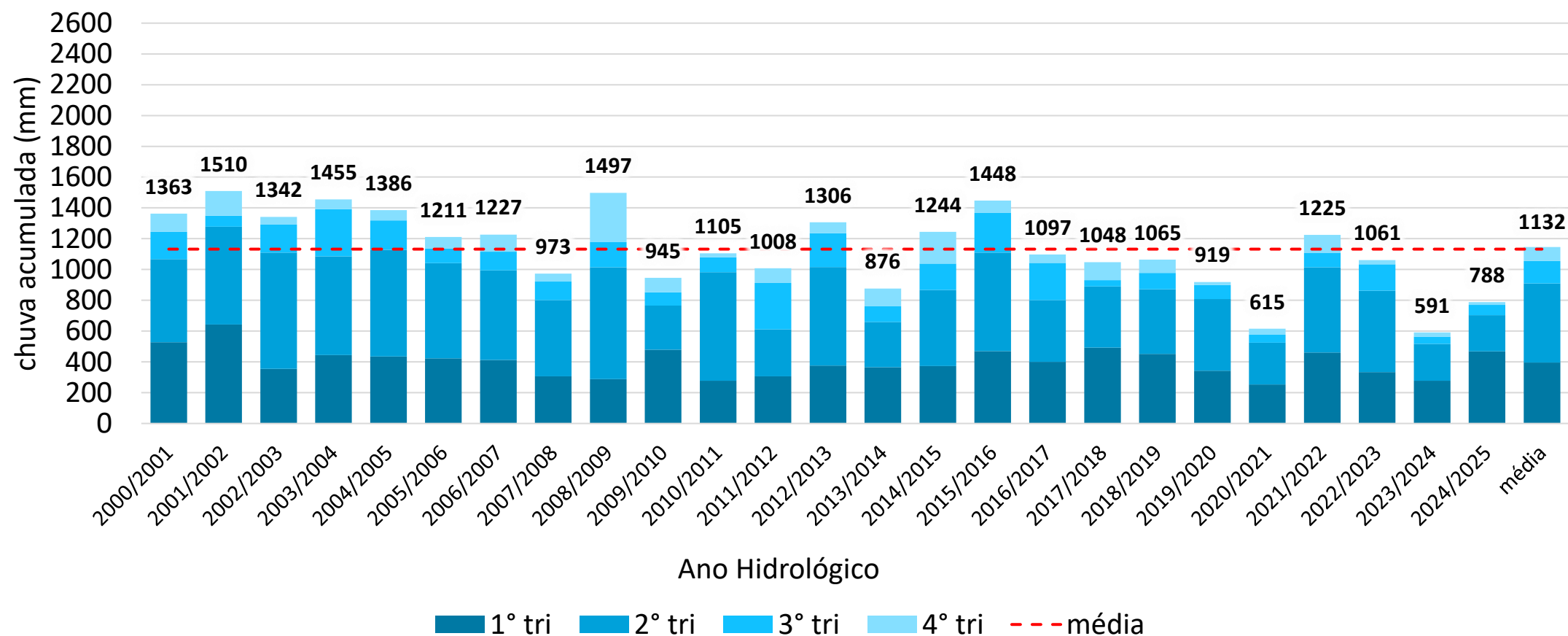


UGRHI 15 - Turvo/Grande | SPI-12

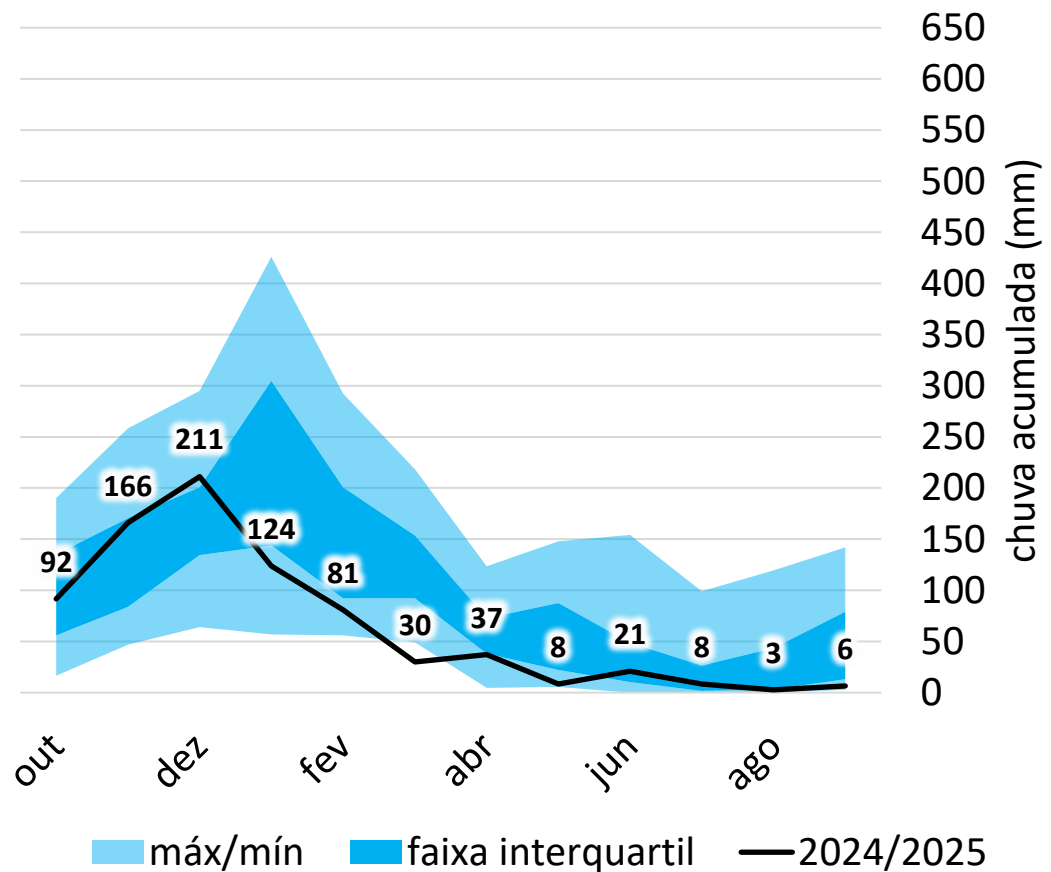
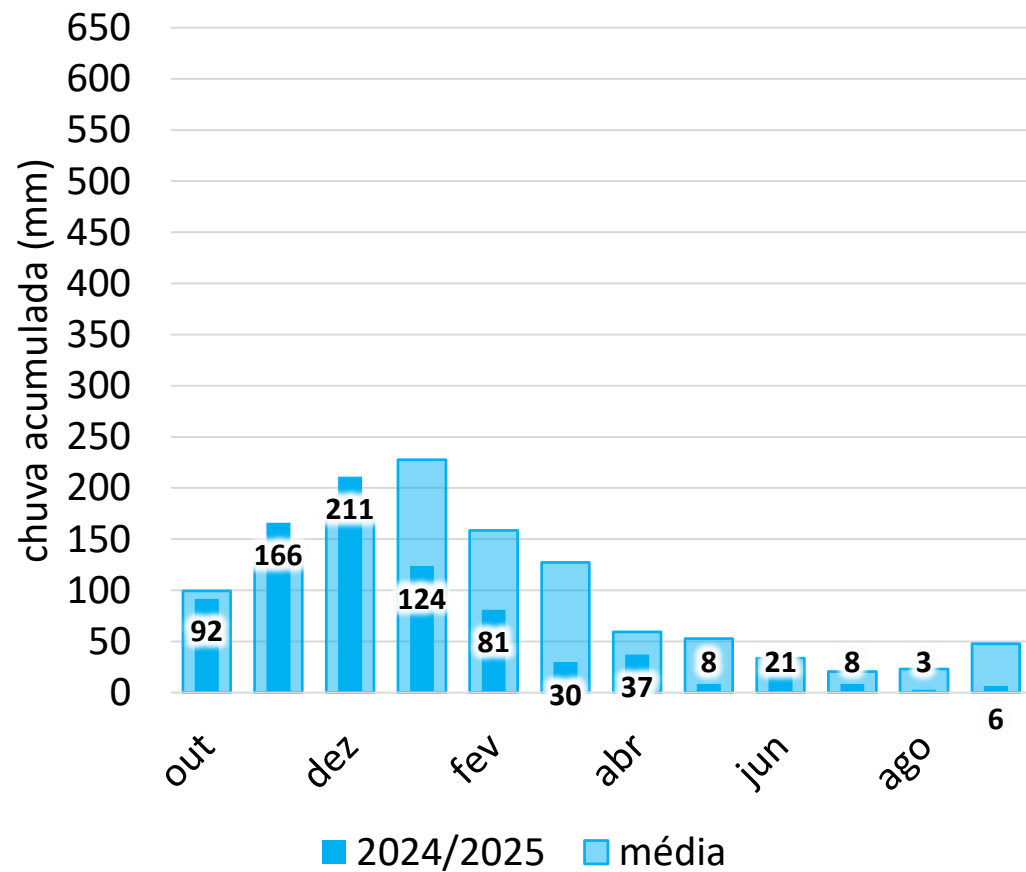




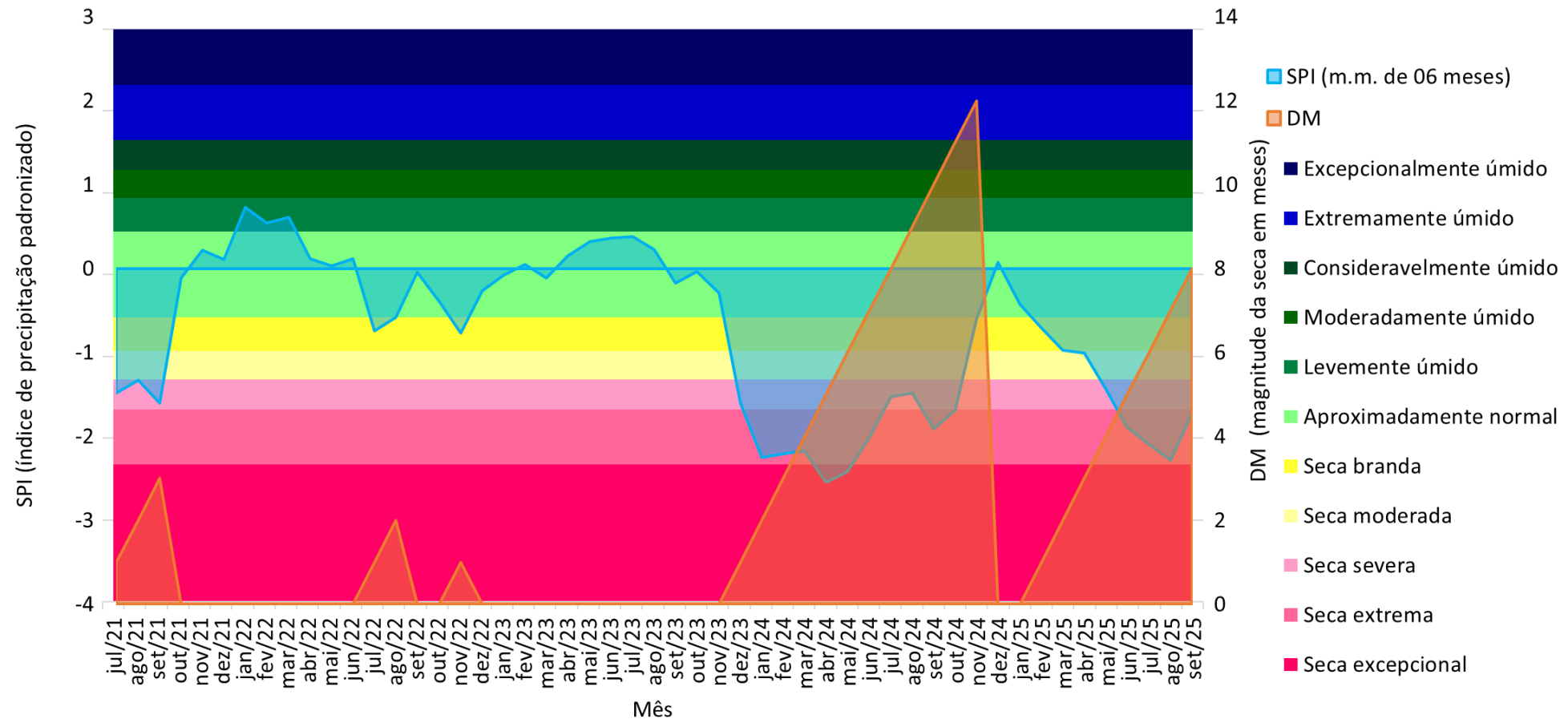
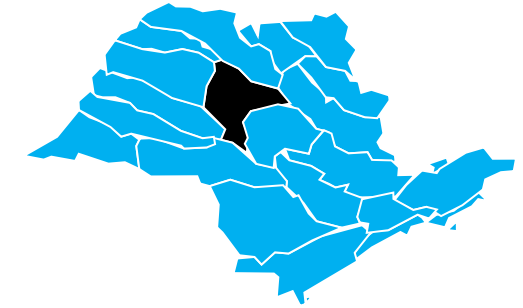
UGRHI 16 - Tietê/Batalha



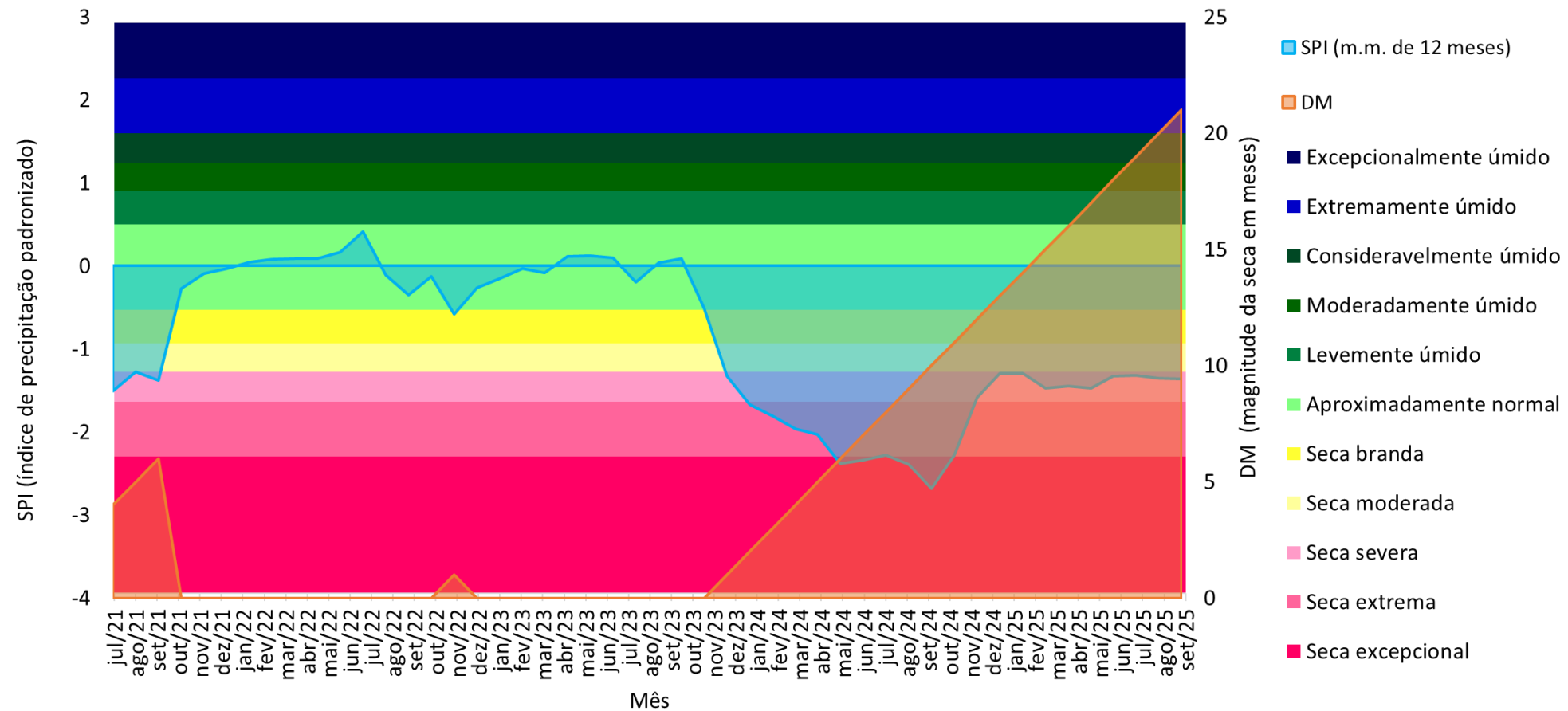
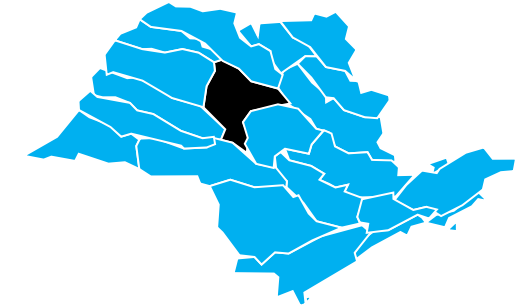
UGRHI 16 - Tietê/Batalha



UGRHI 16 - Tietê/Batalha | SPI-06

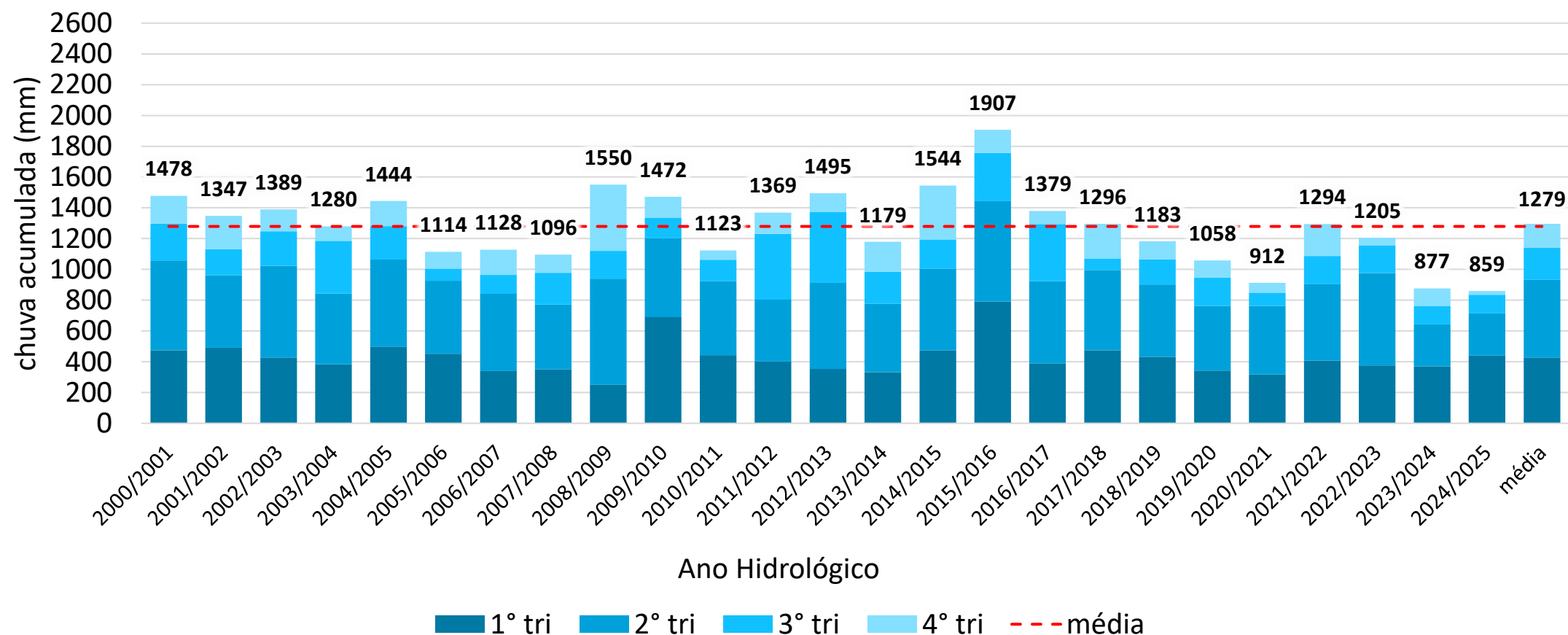


UGRHI 16 - Tietê/Batalha | SPI-12

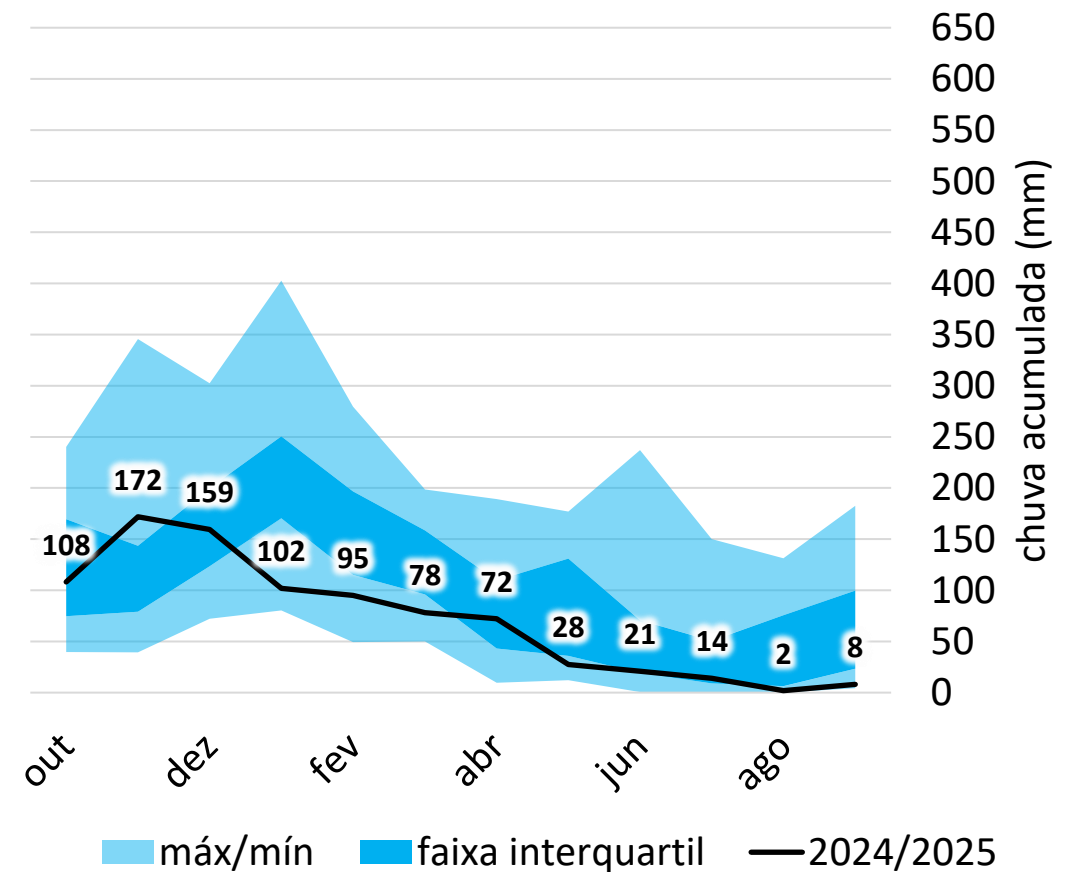
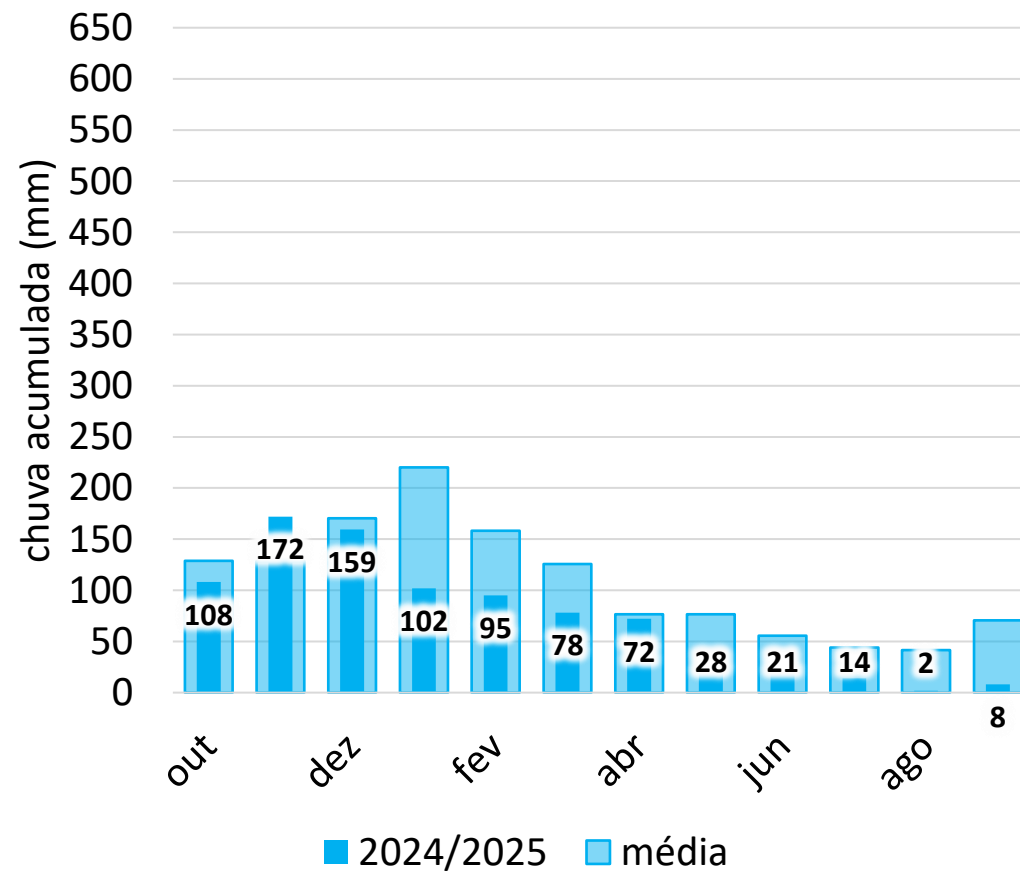




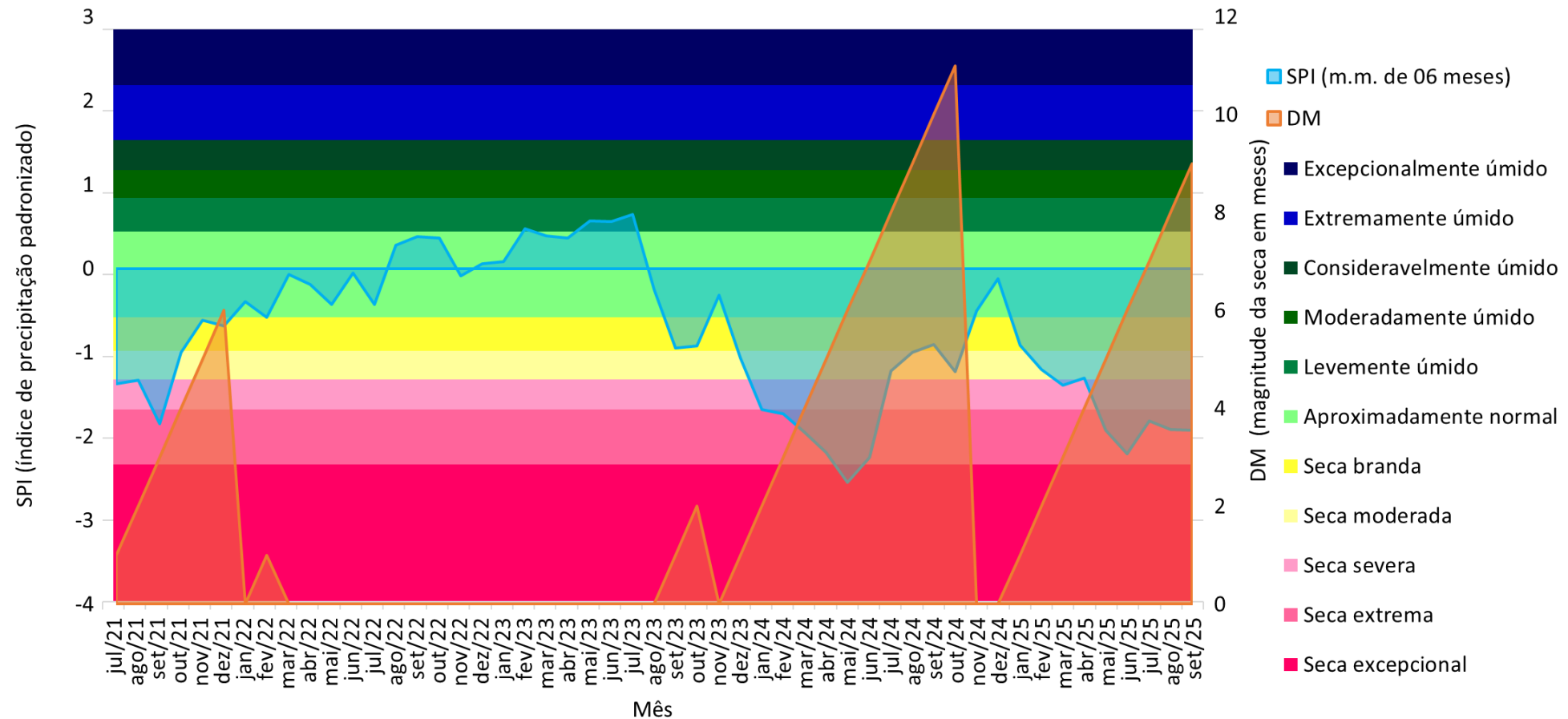
UGRHI 17 - Médio Paranapanema



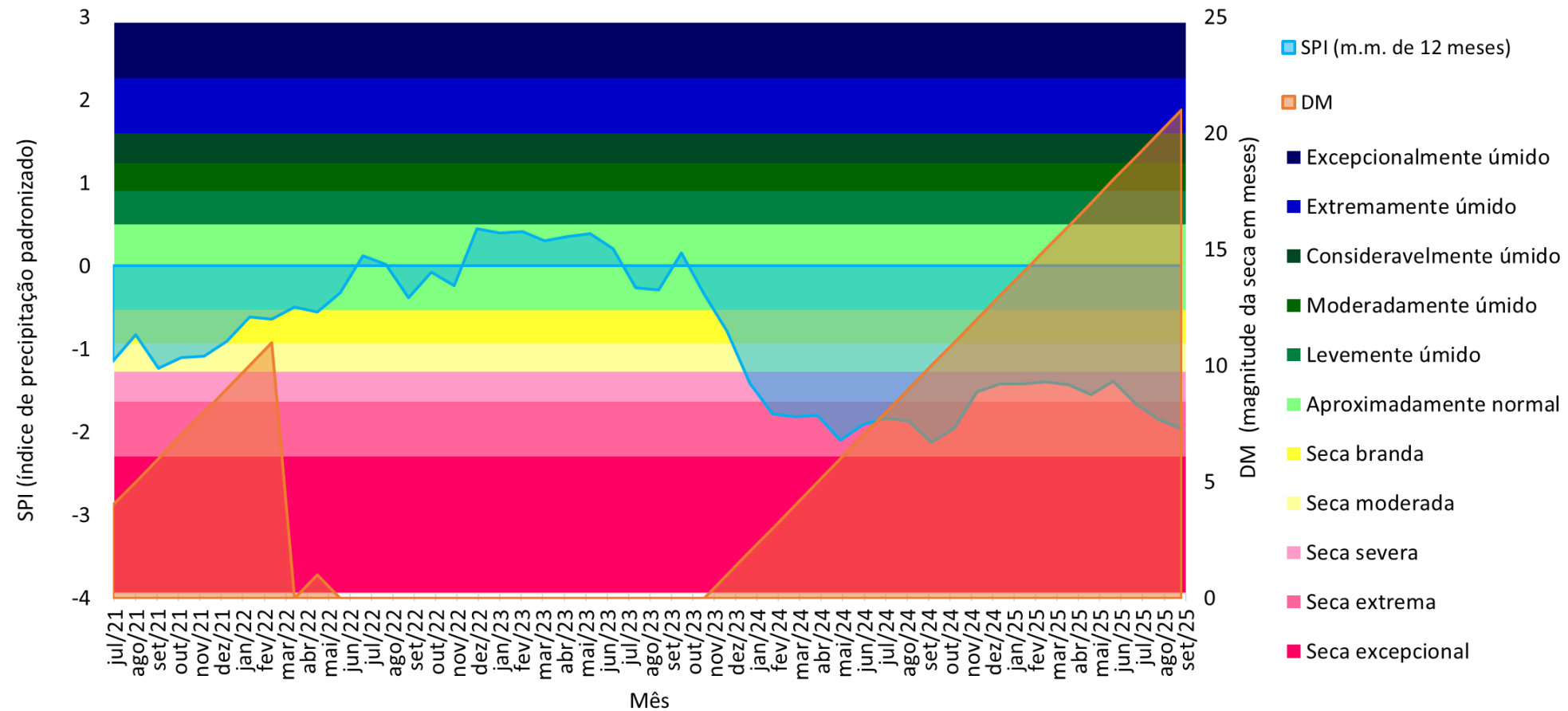
UGRHI 17 - Médio Paranapanema

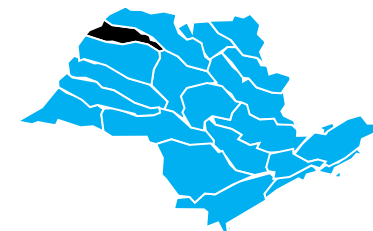


UGRHI 17 - Médio Paranapanema | SPI-06

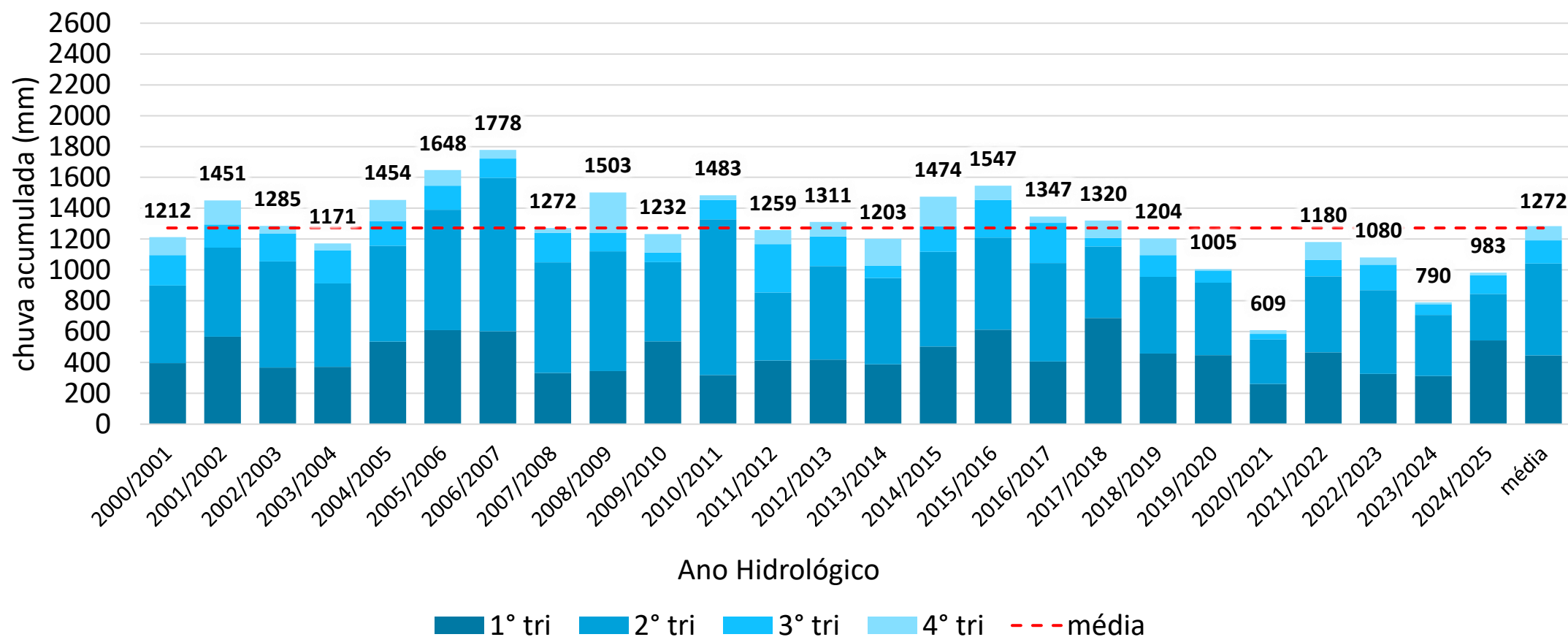


UGRHI 17 - Médio Paranapanema | SPI-12

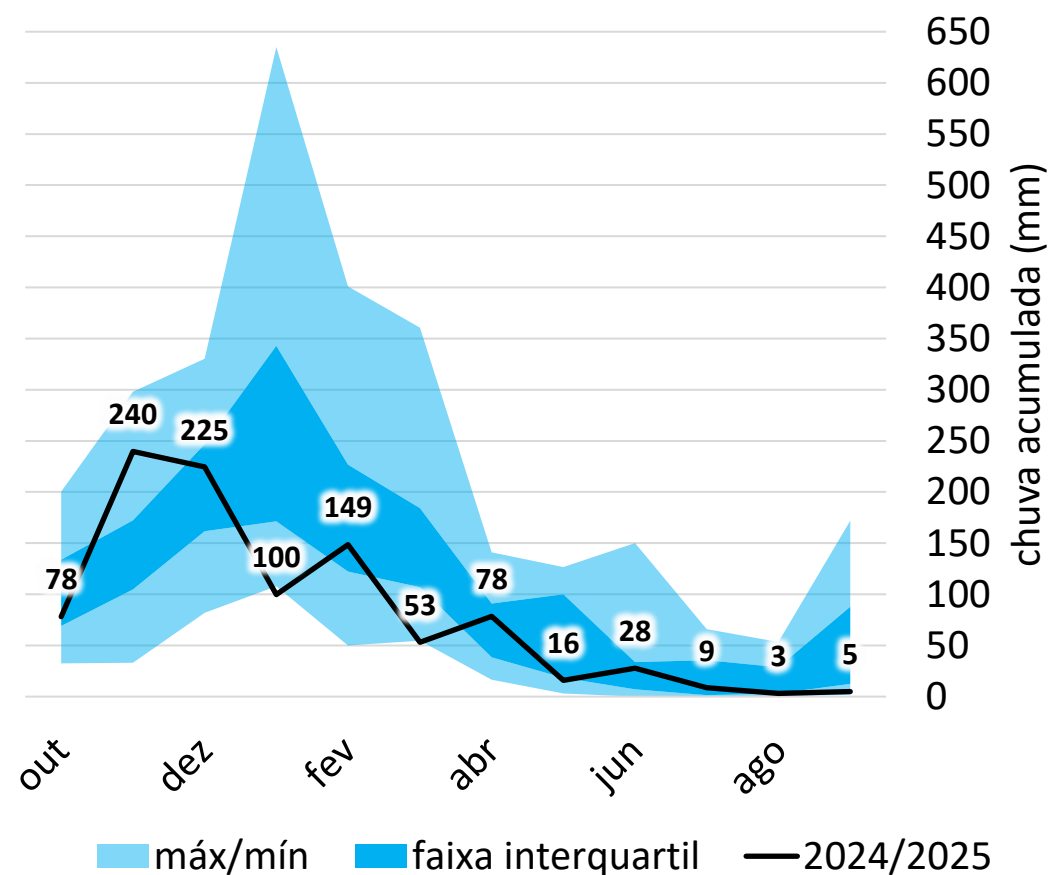
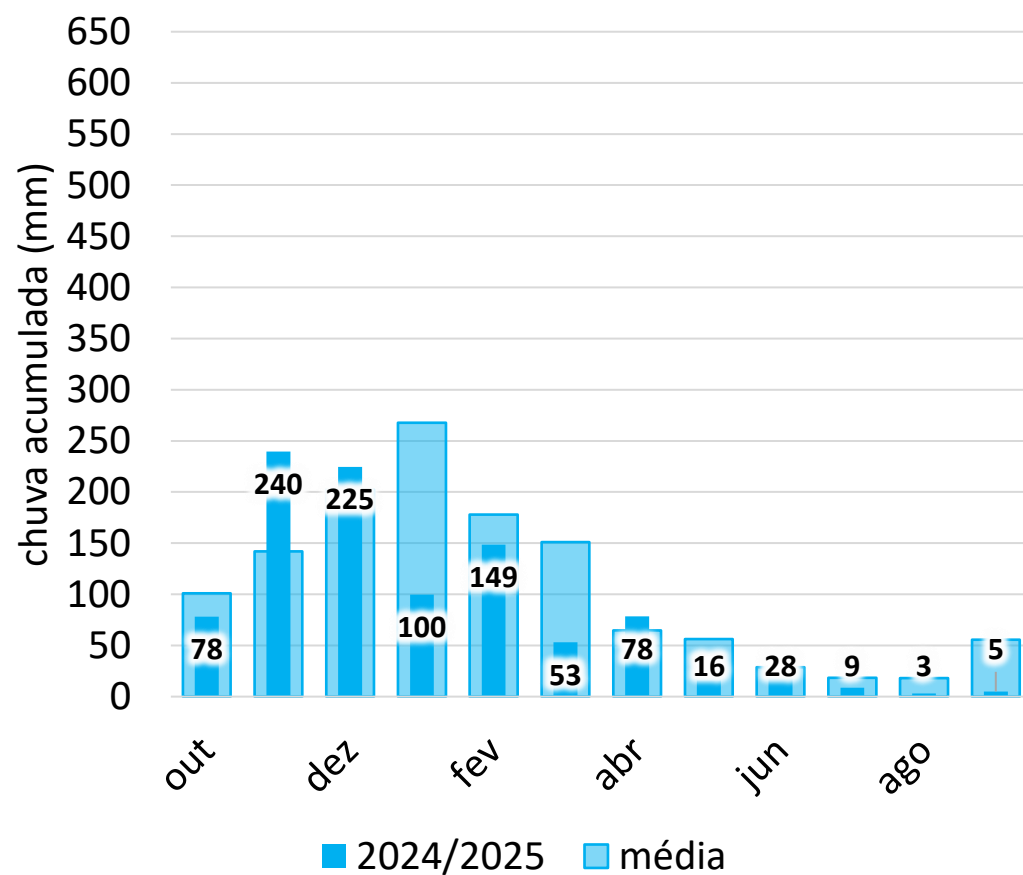
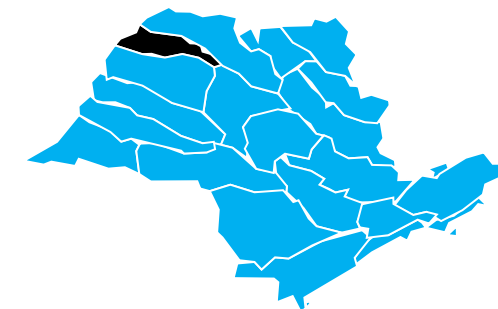




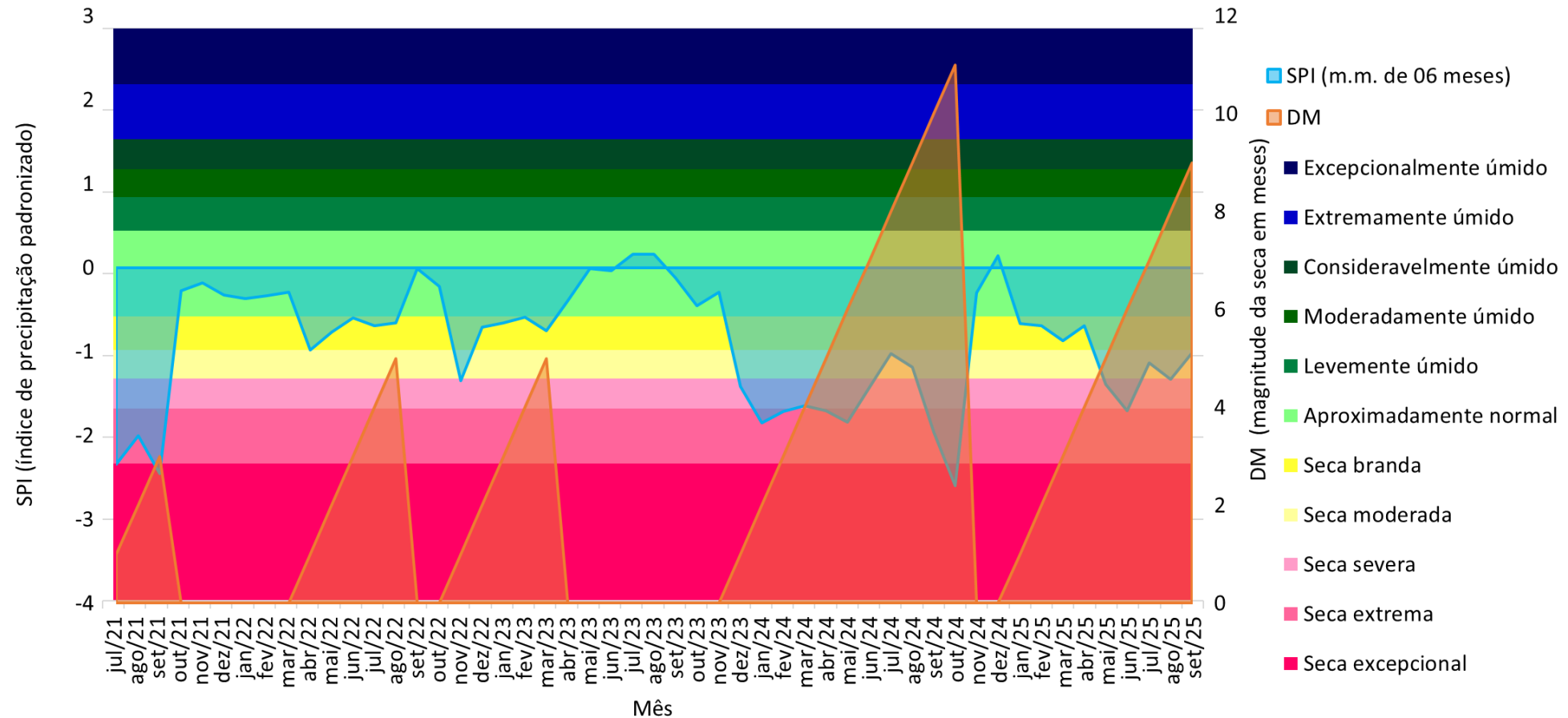
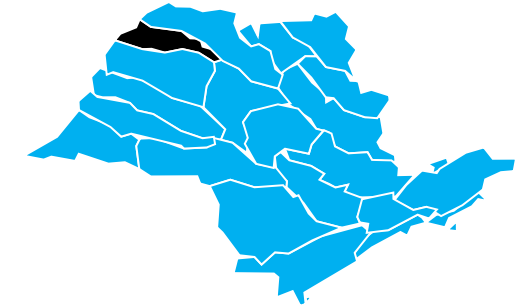
UGRHI 18 - São José dos Dourados



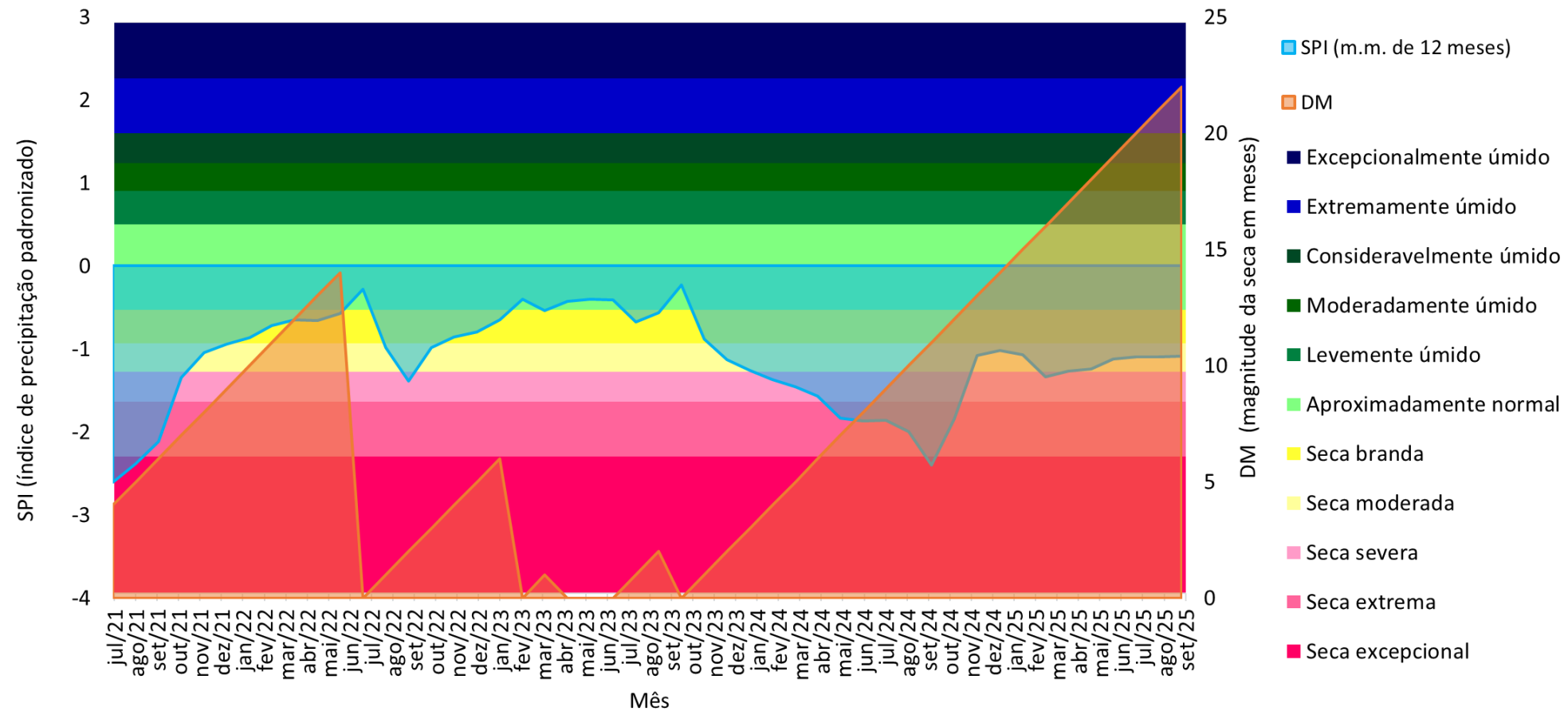
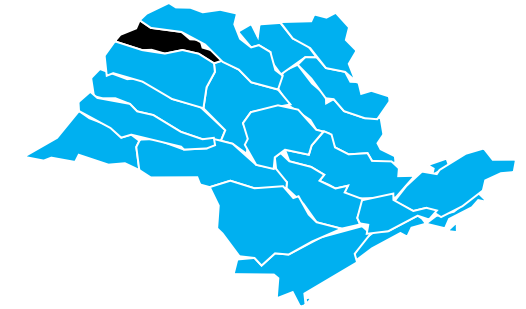
UGRHI 18 - São José dos Dourados



UGRHI 18 - São José dos Dourados | SPI-06

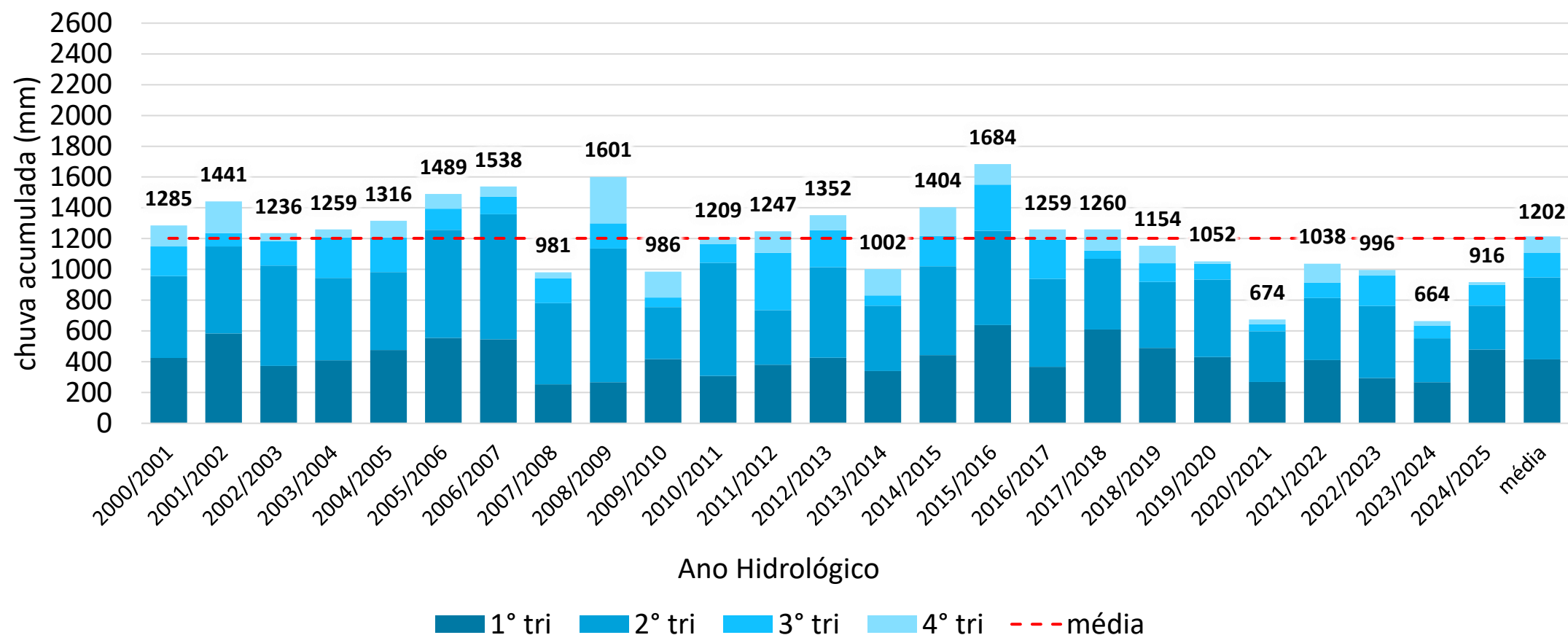


UGRHI 18 - São José dos Dourados | SPI-12

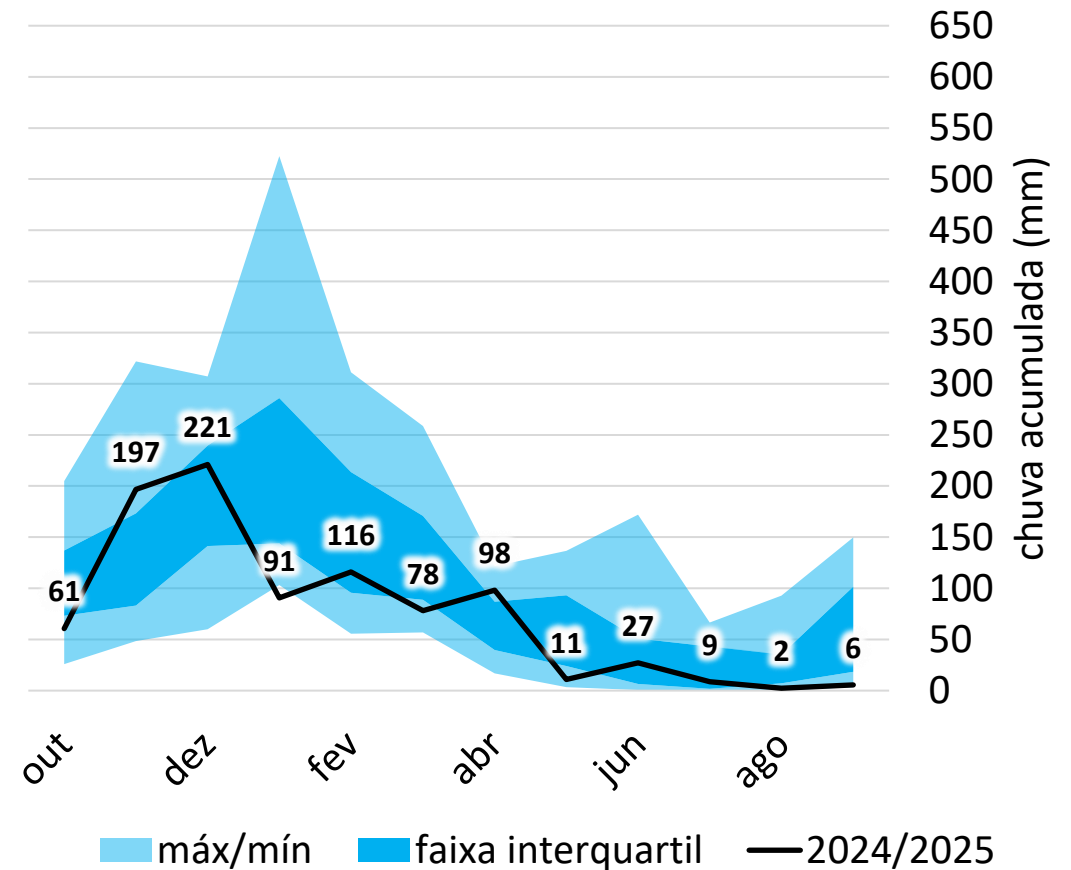
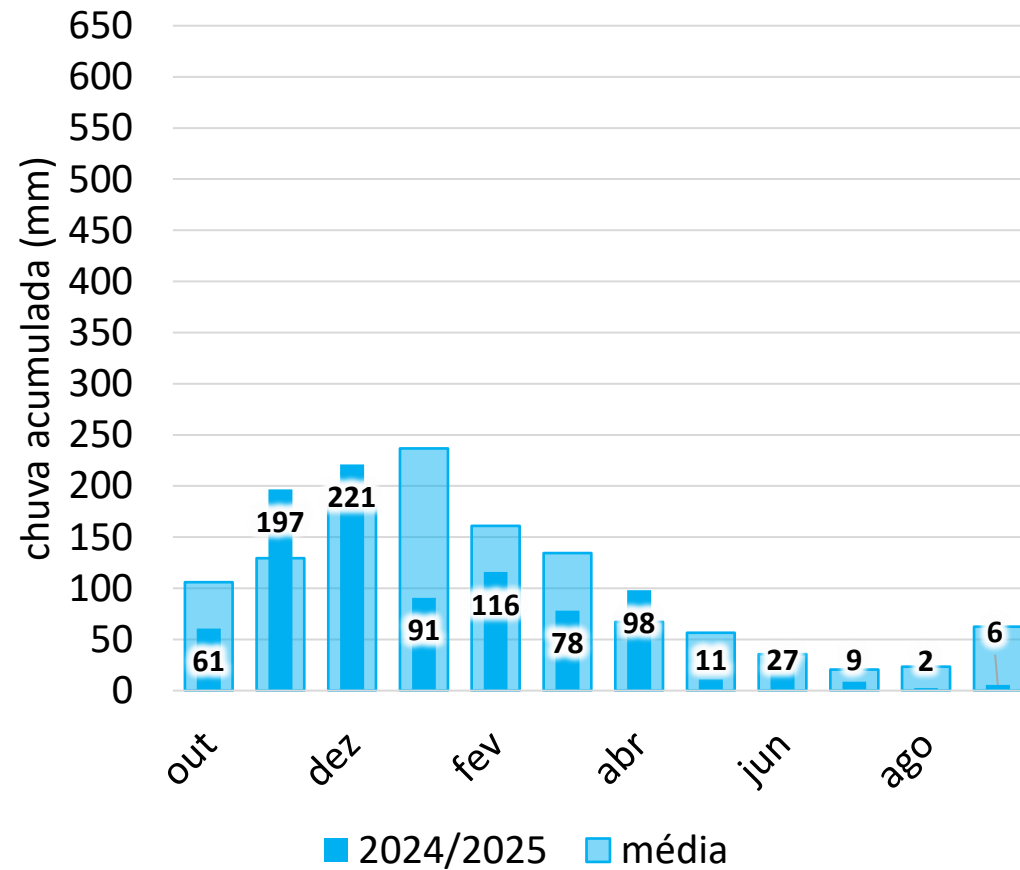
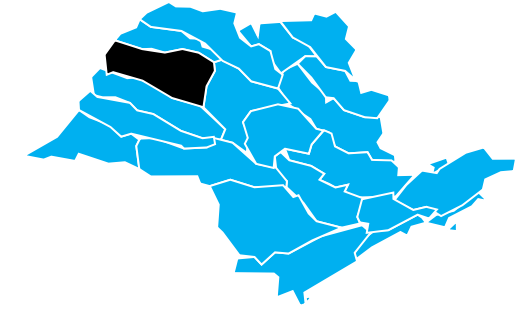




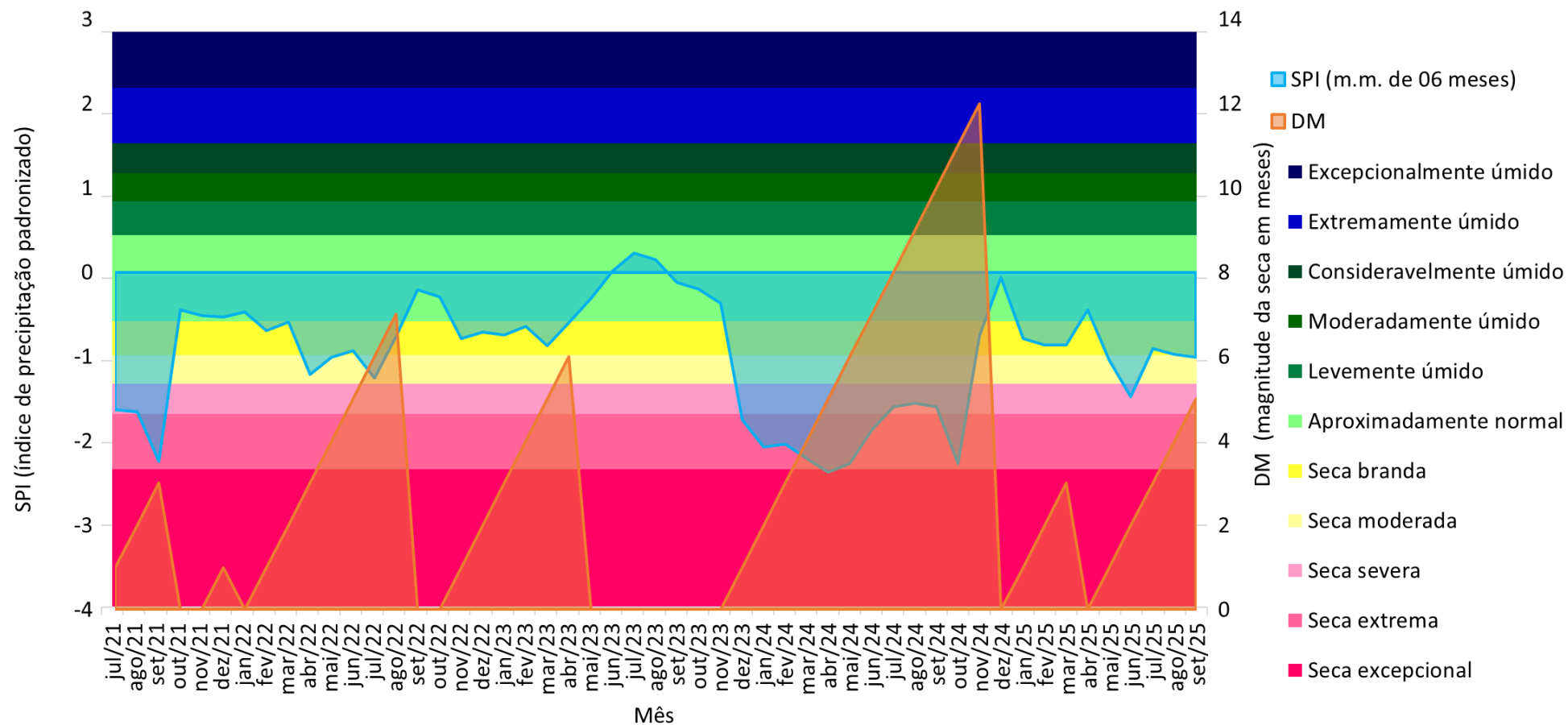
UGRHI 19 - Baixo Tietê



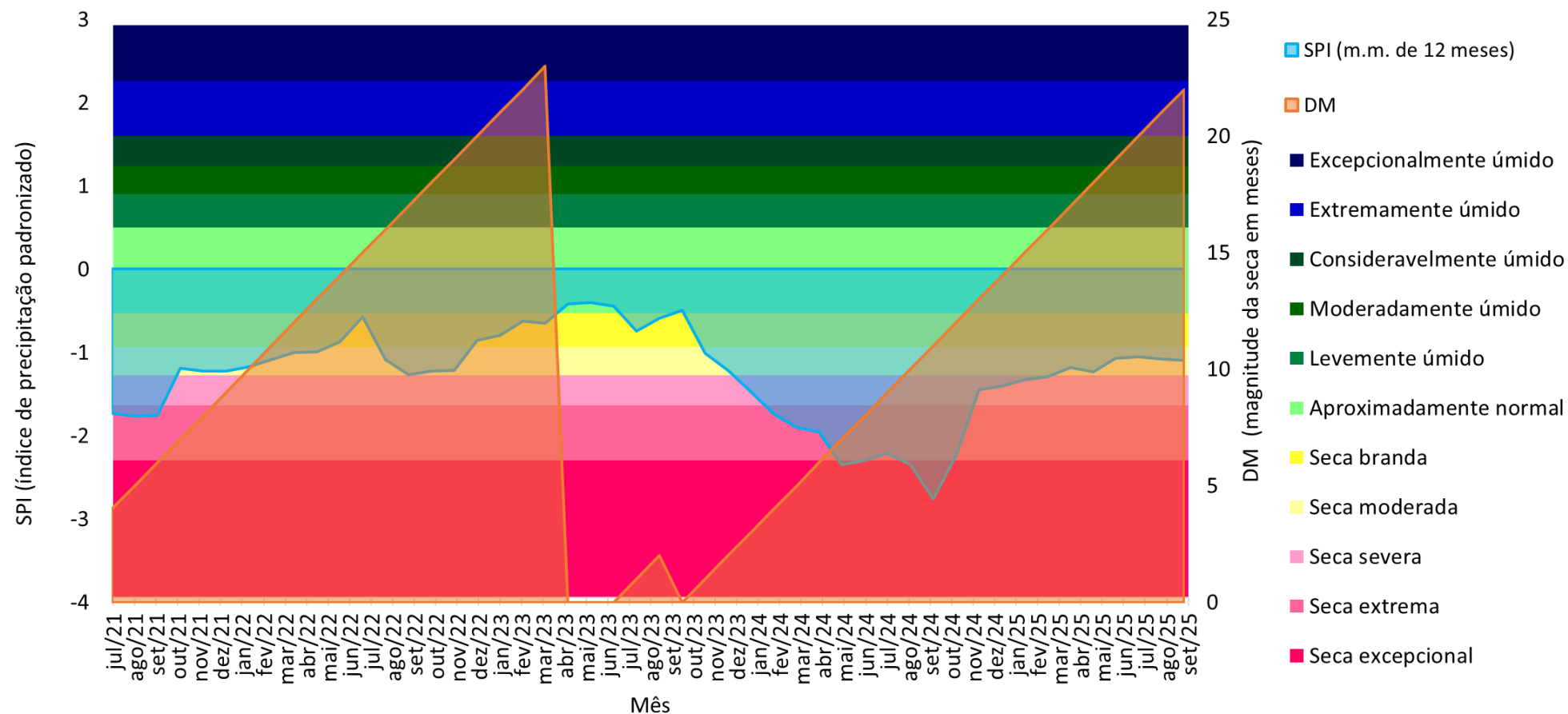
UGRHI 19 - Baixo Tietê



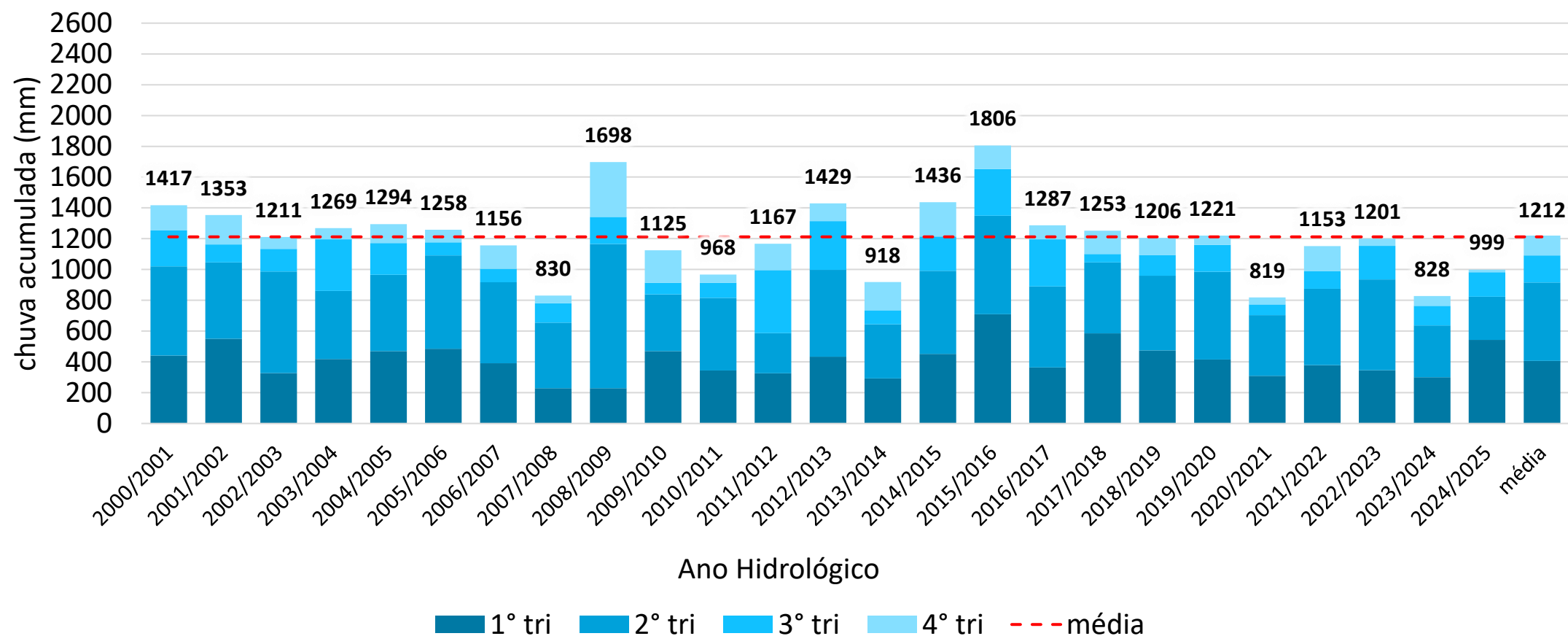
UGRHI 19 - Baixo Tietê | SPI-06



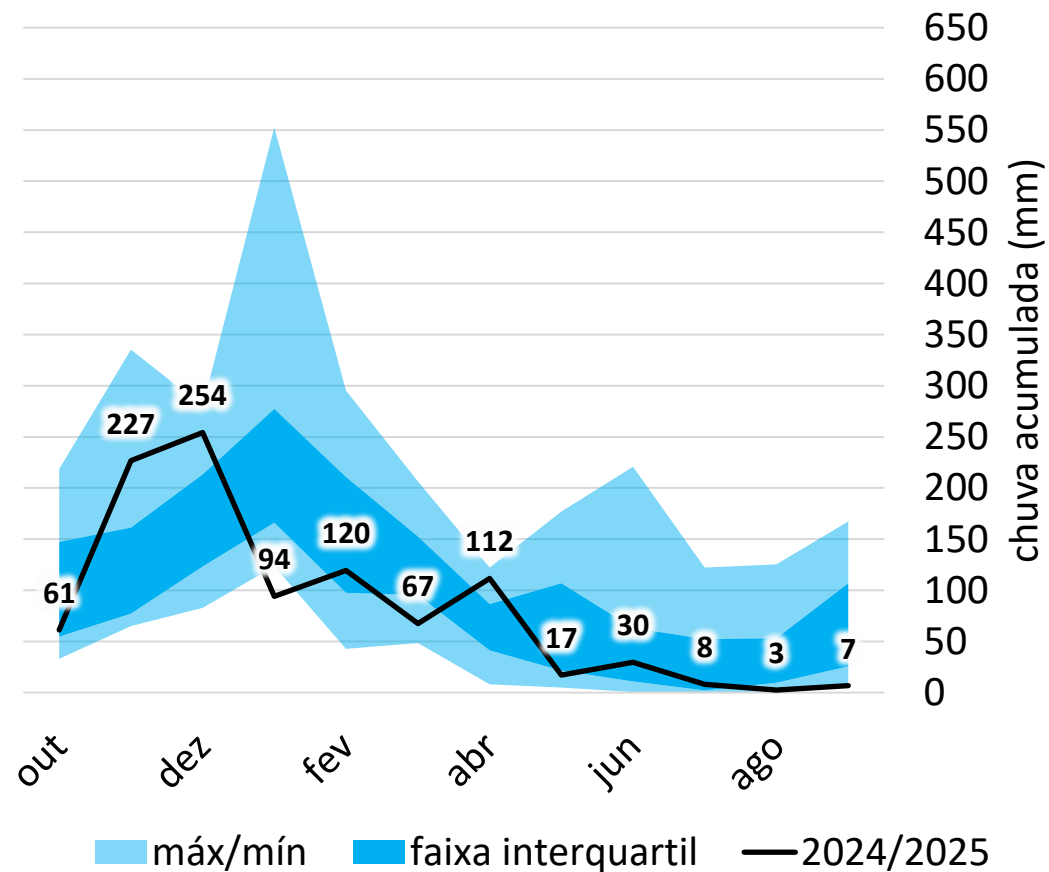
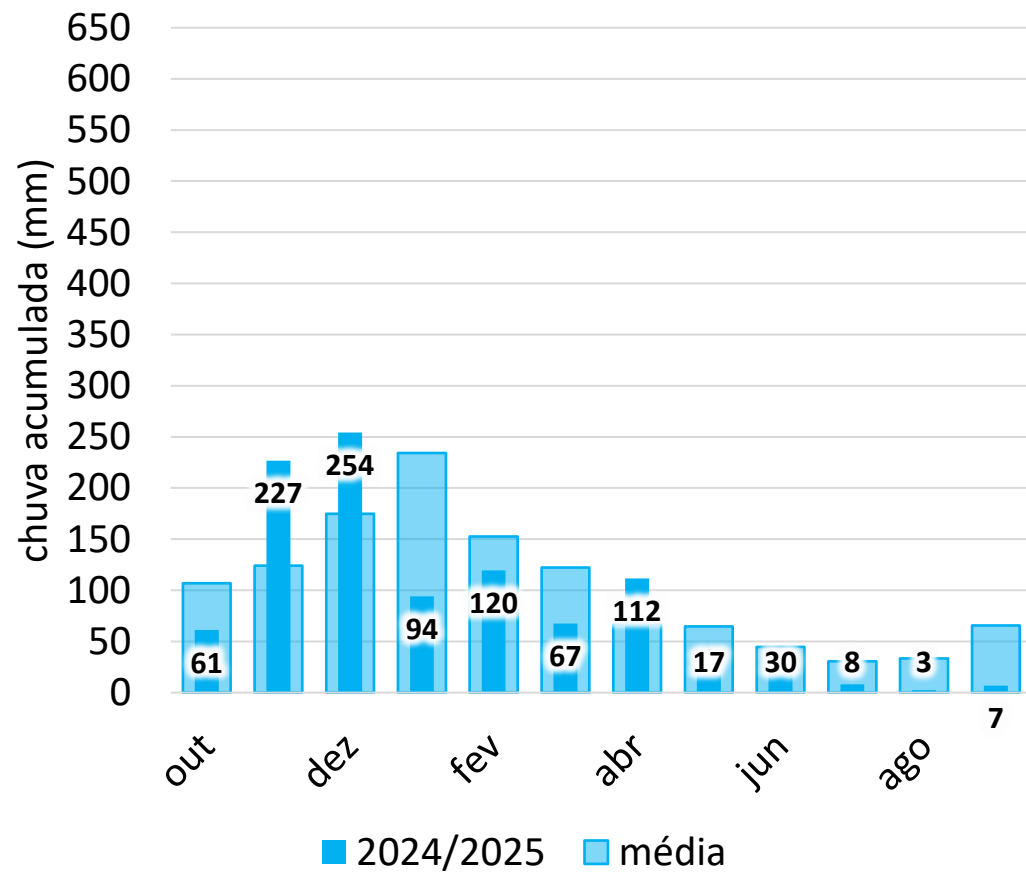
UGRHI 19 - Baixo Tietê | SPI-12



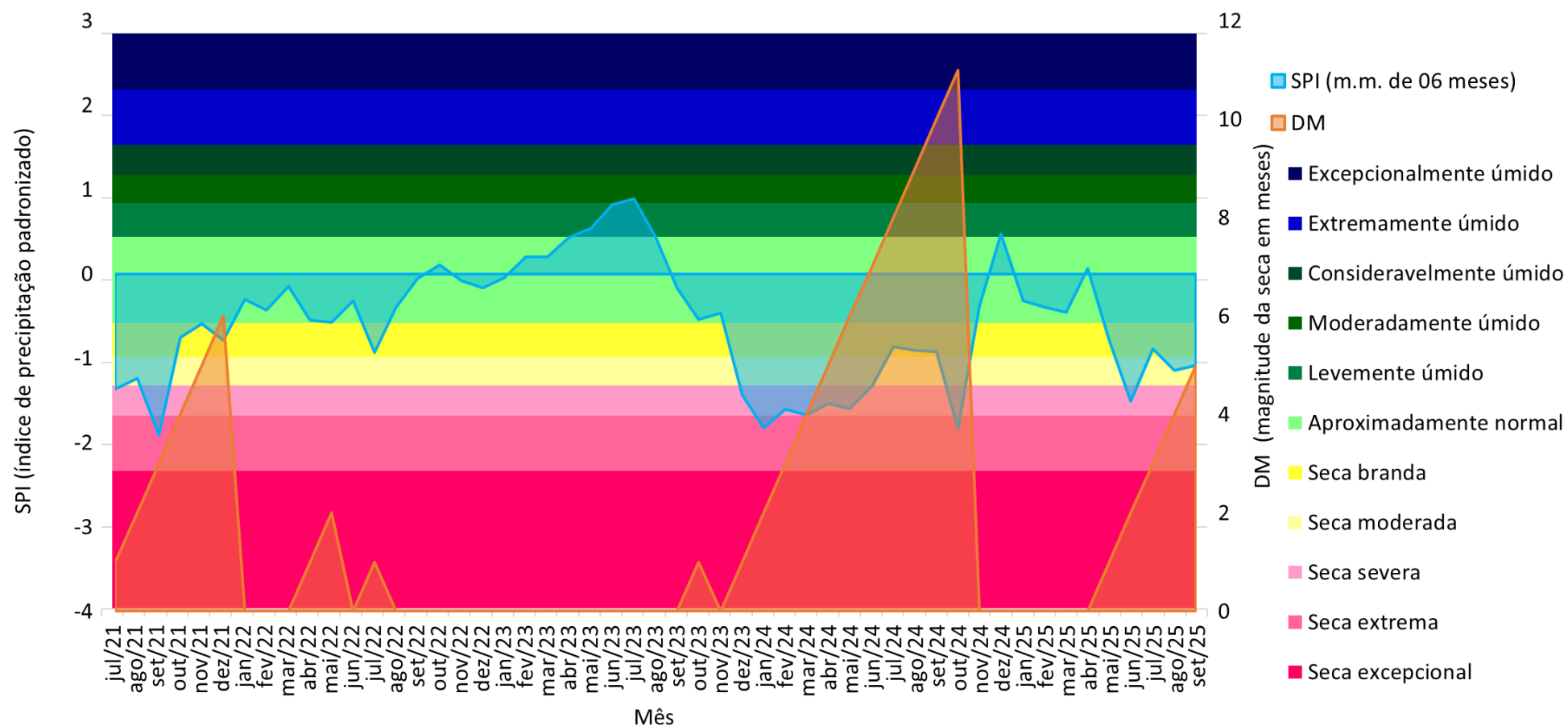
UGRHI 20 - Aguapeí



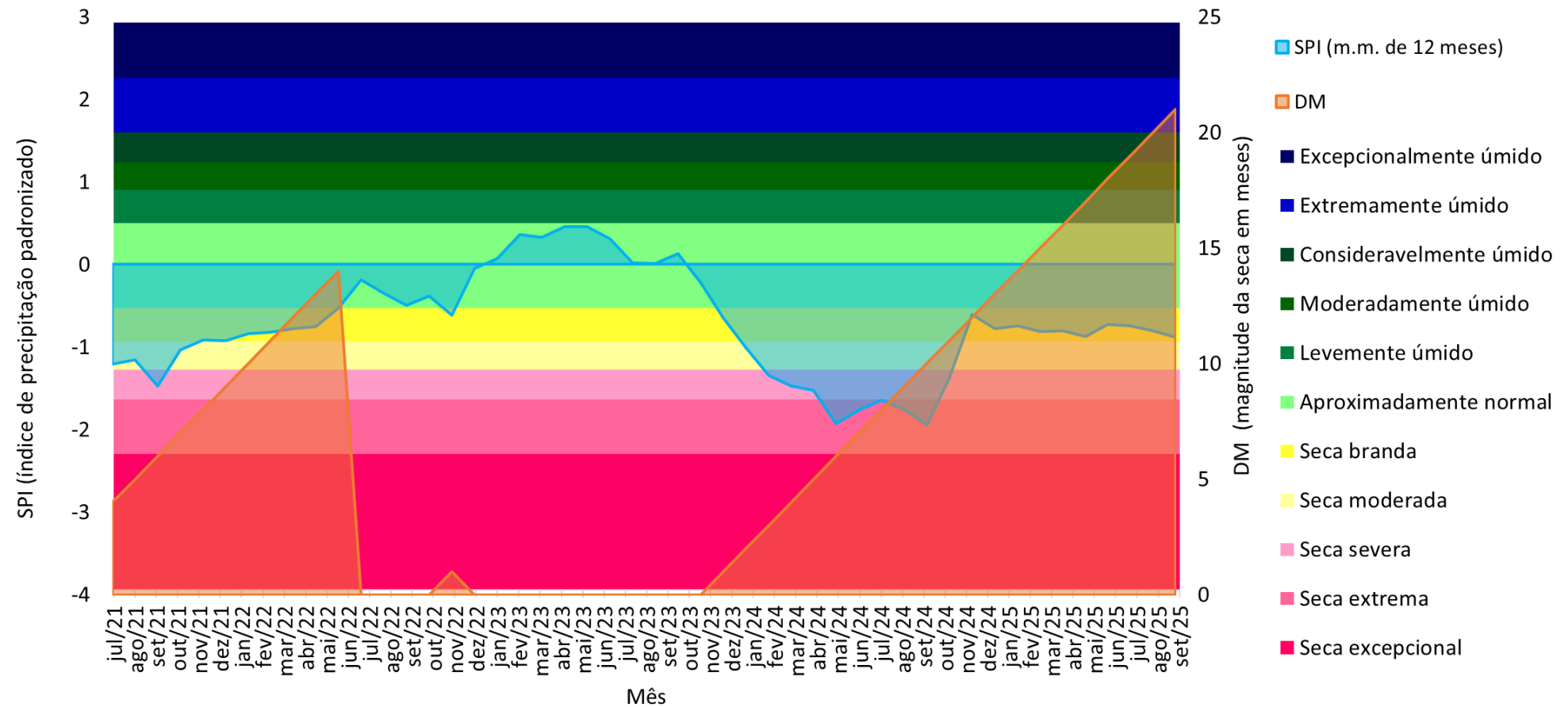
UGRHI 20 - Aguapeí



UGRHI 20 - Aguapeí | SPI-06

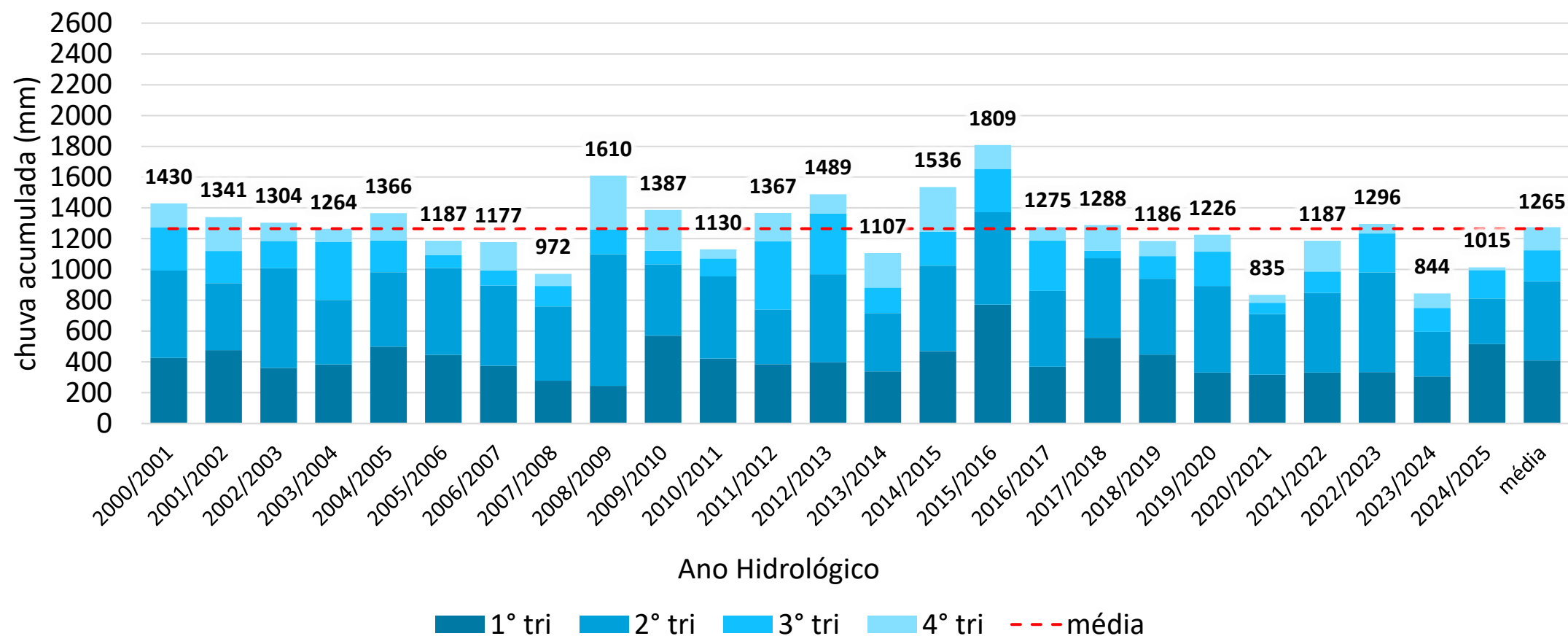


UGRHI 20 - Aguapeí | SPI-12

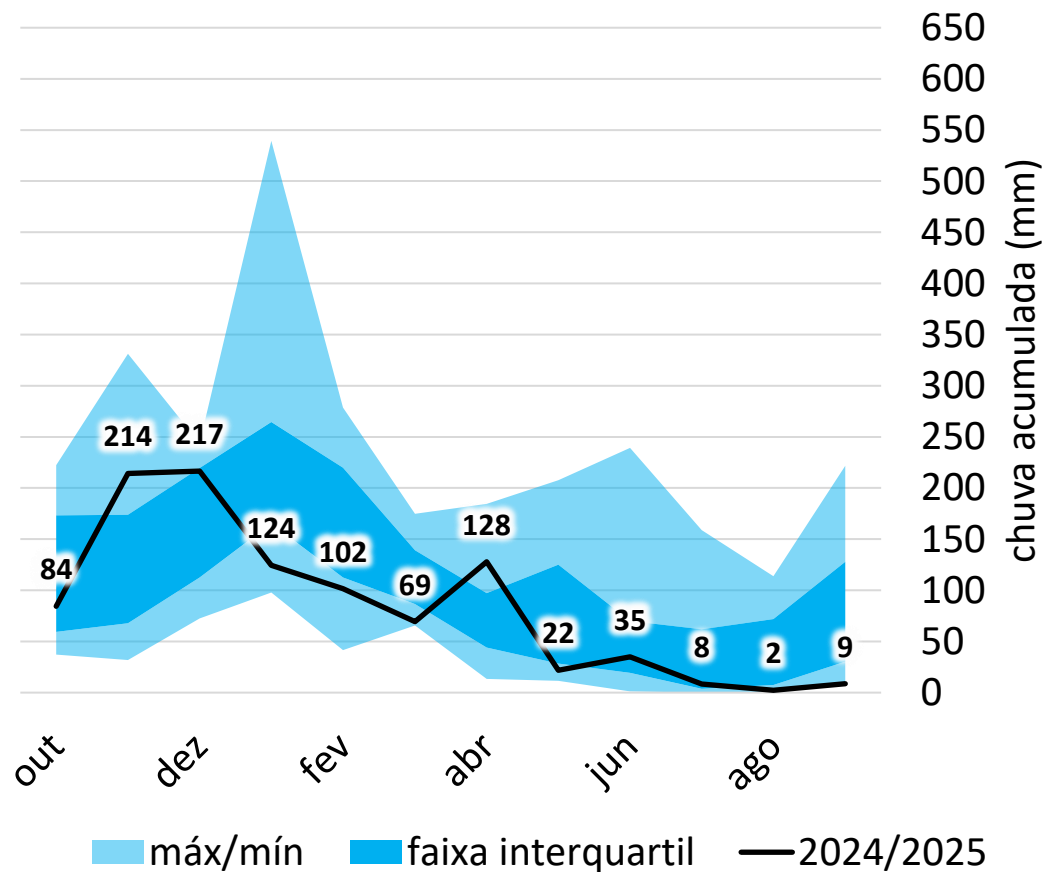
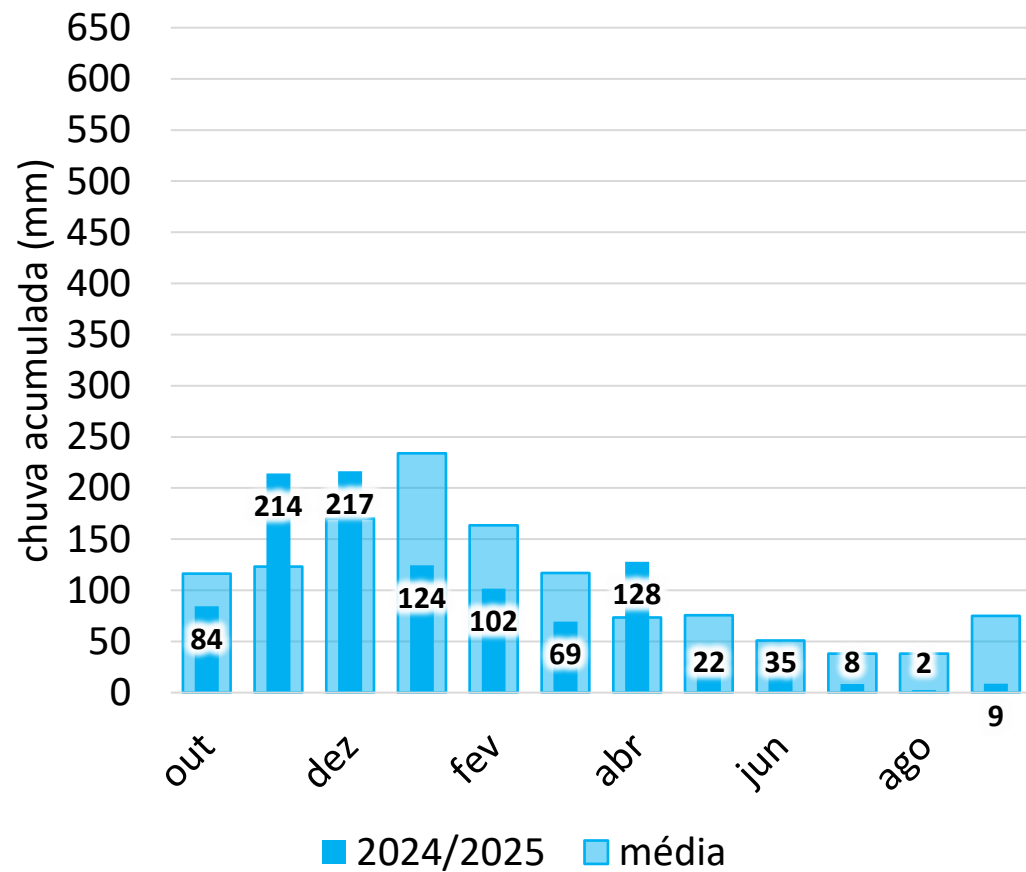




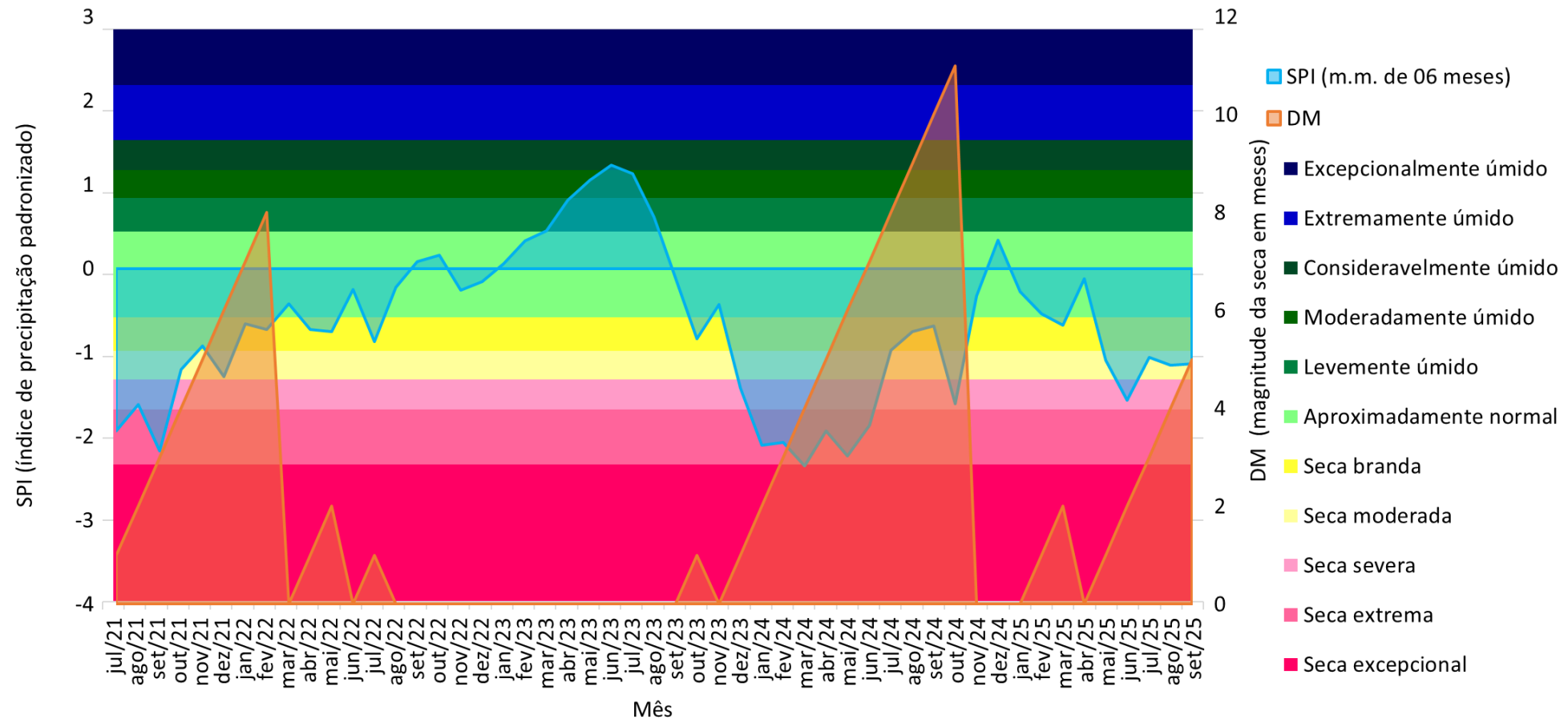
UGRHI 21 - Peixe



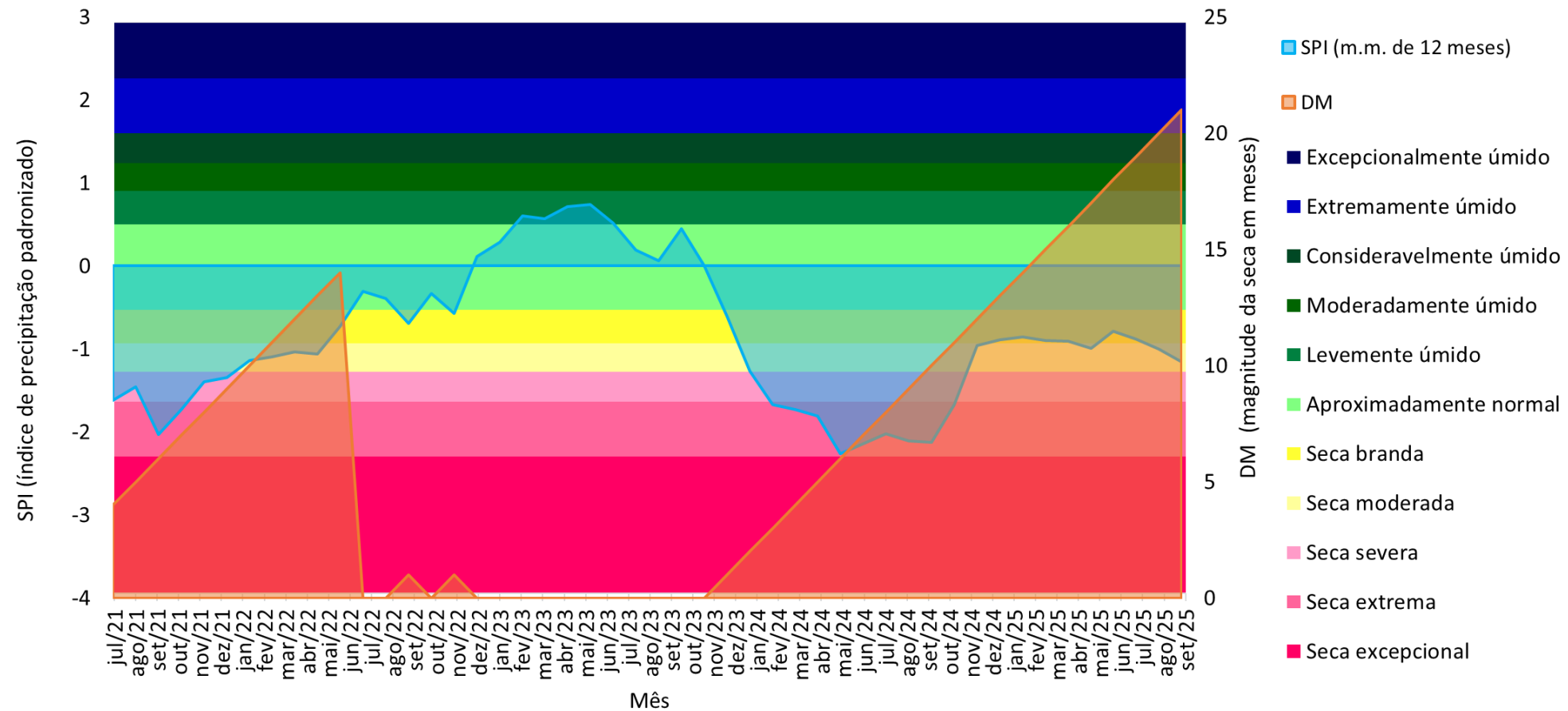
UGRHI 21 - Peixe

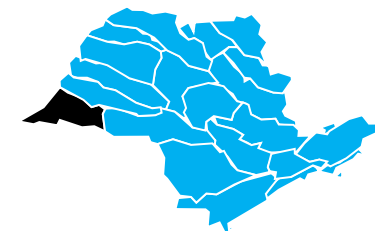


UGRHI 21 – Peixe | SPI-06

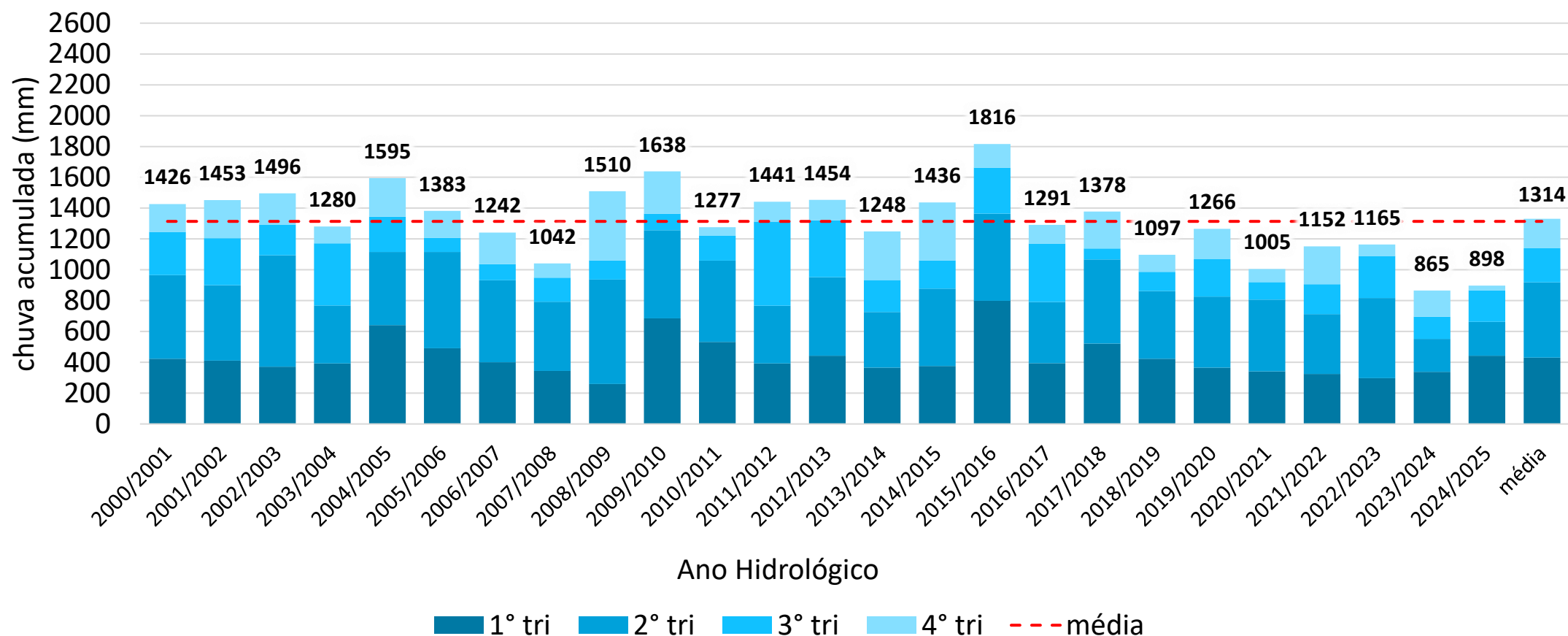


UGRHI 21 – Peixe | SPI-12

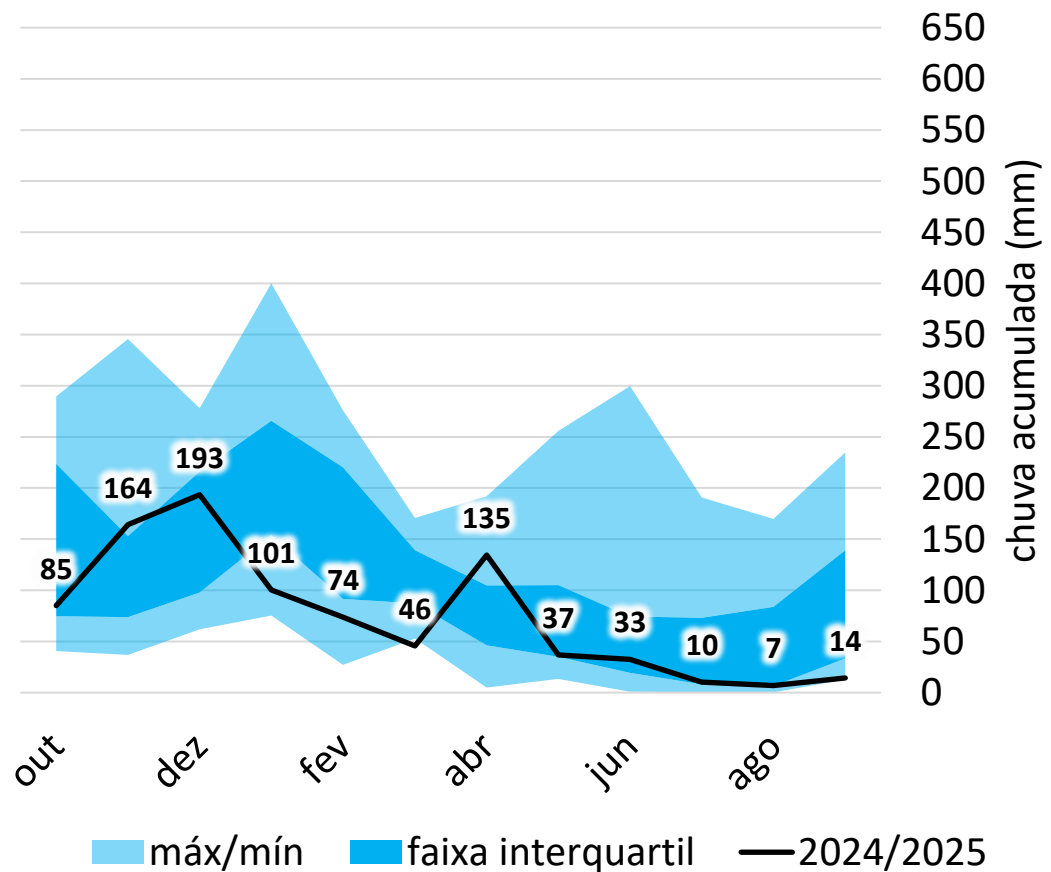
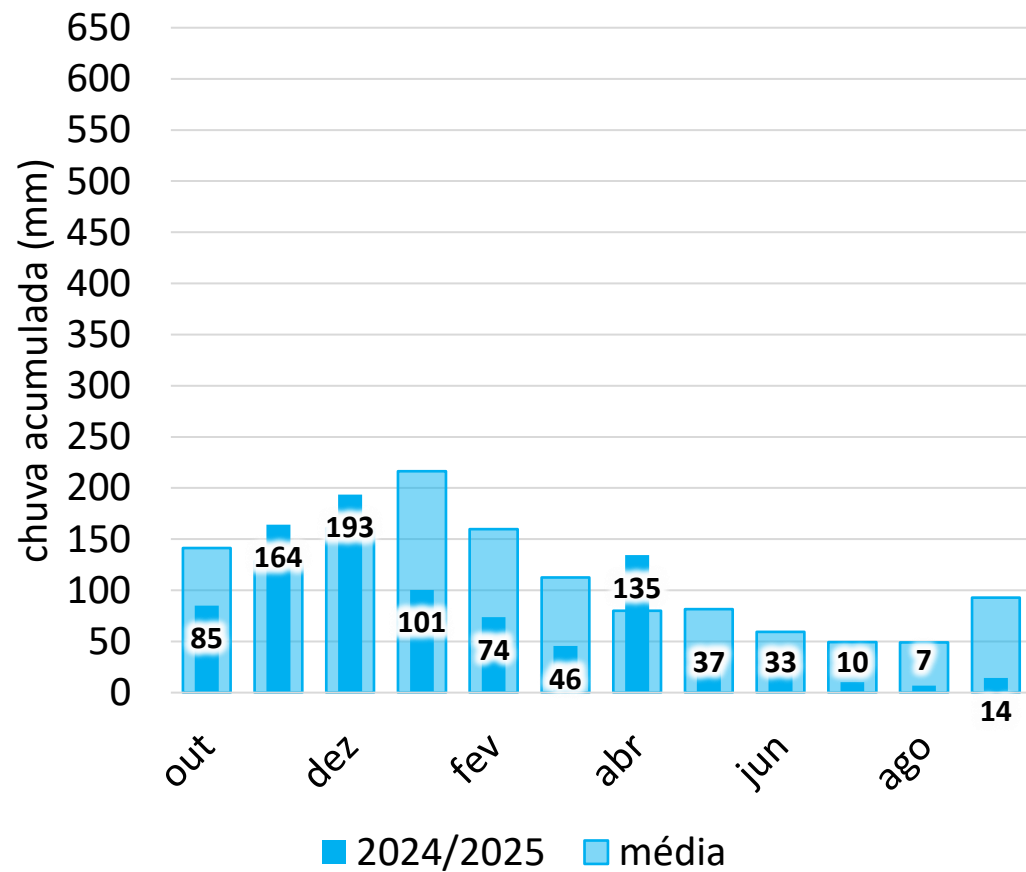




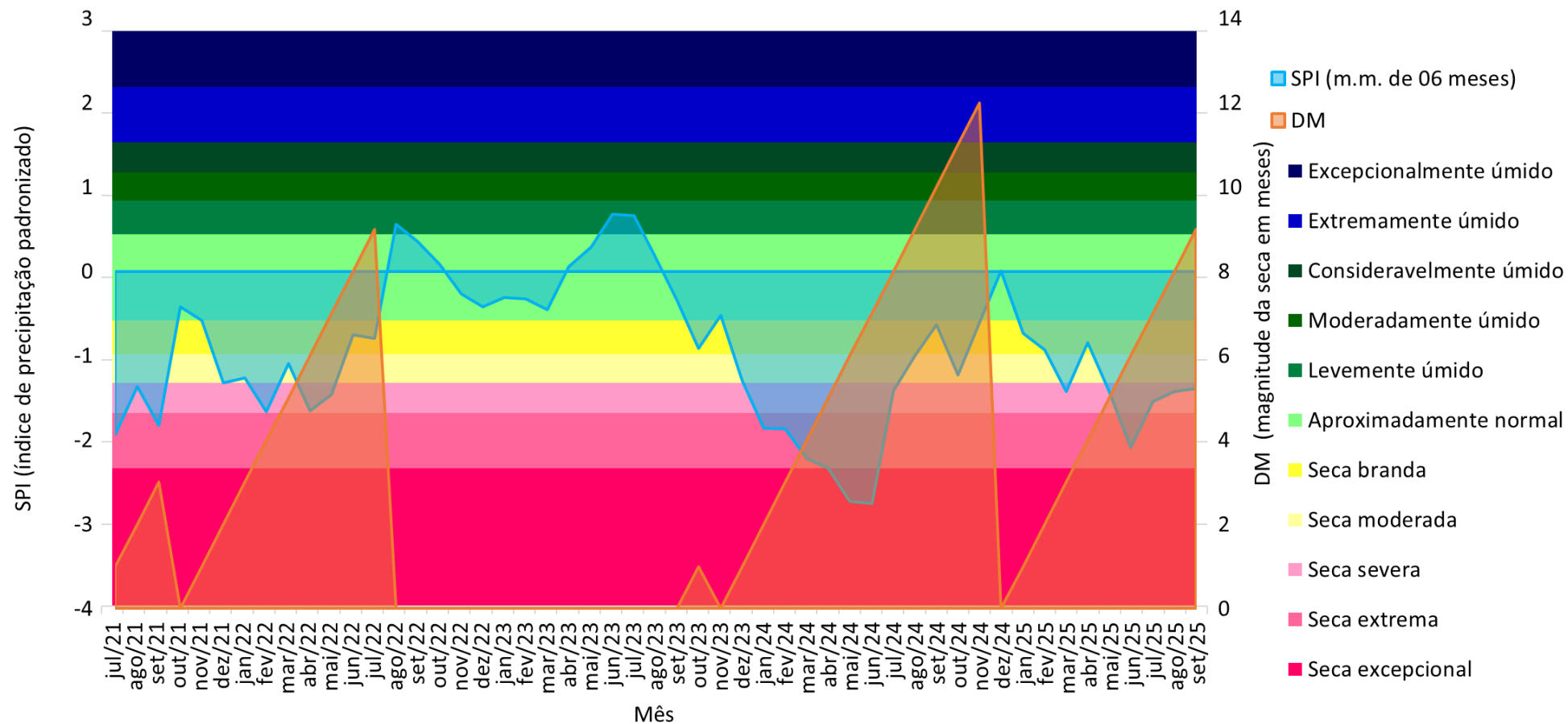
UGRHI 22 - Pontal do Paranapanema



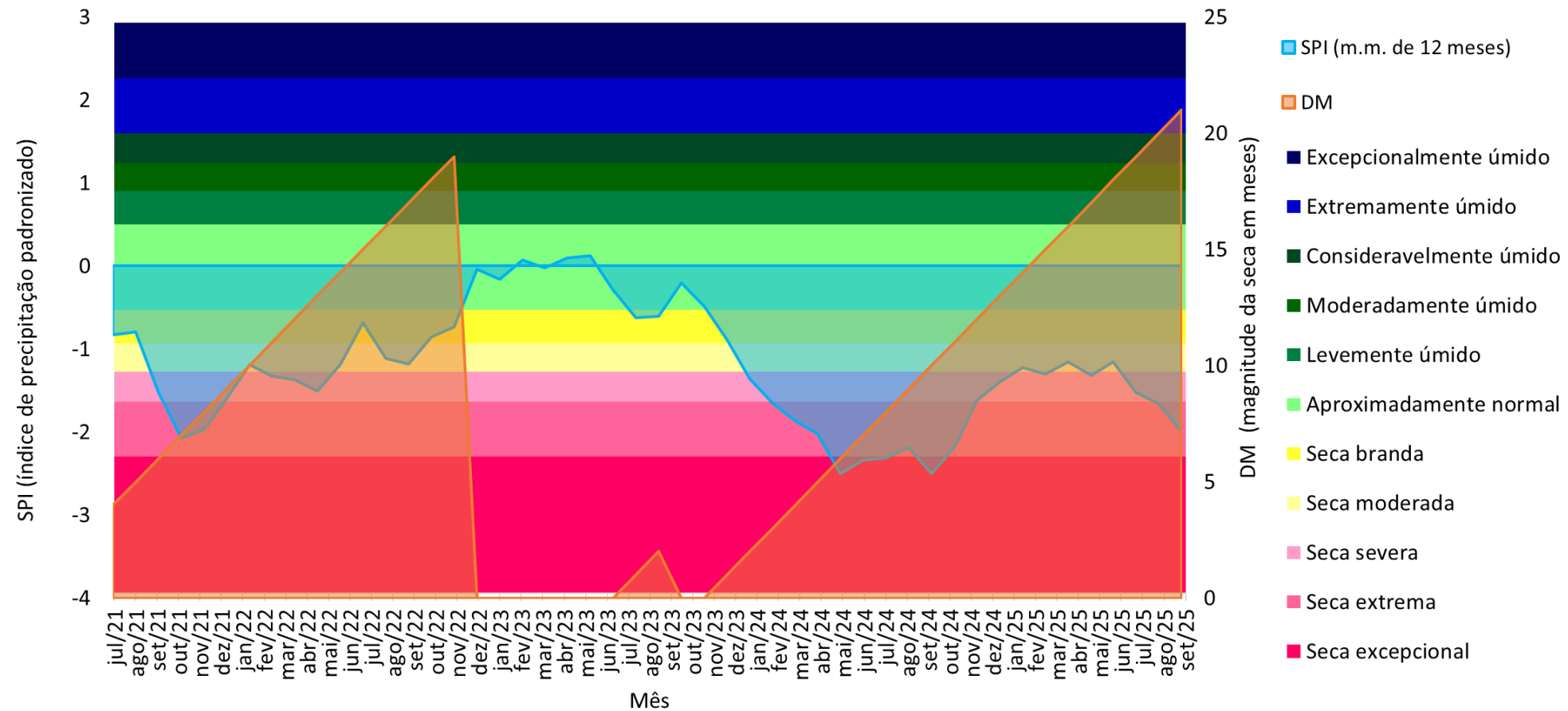
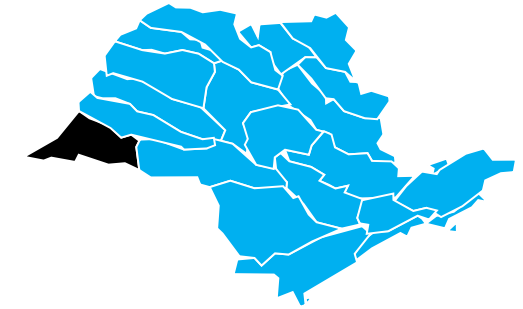
UGRHI 22 - Pontal do Paranapanema



UGRHI 22 - Pontal do Paranapanema | SPI-06



UGRHI 22 - Pontal do Paranapanema | SPI-12





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