

Aggiornamento 2025 delle componenti del bilancio idrologico nazionale e della disponibilità di risorsa idrica

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Dipartimento per il monitoraggio e la tutela dell'ambiente e per la conservazione della biodiversità

Area per l'idrologia, l'idrodinamica e l'idromorfologia, lo stato e la dinamica evolutiva degli ecosistemi delle acque interne superficiali Roma

Overview

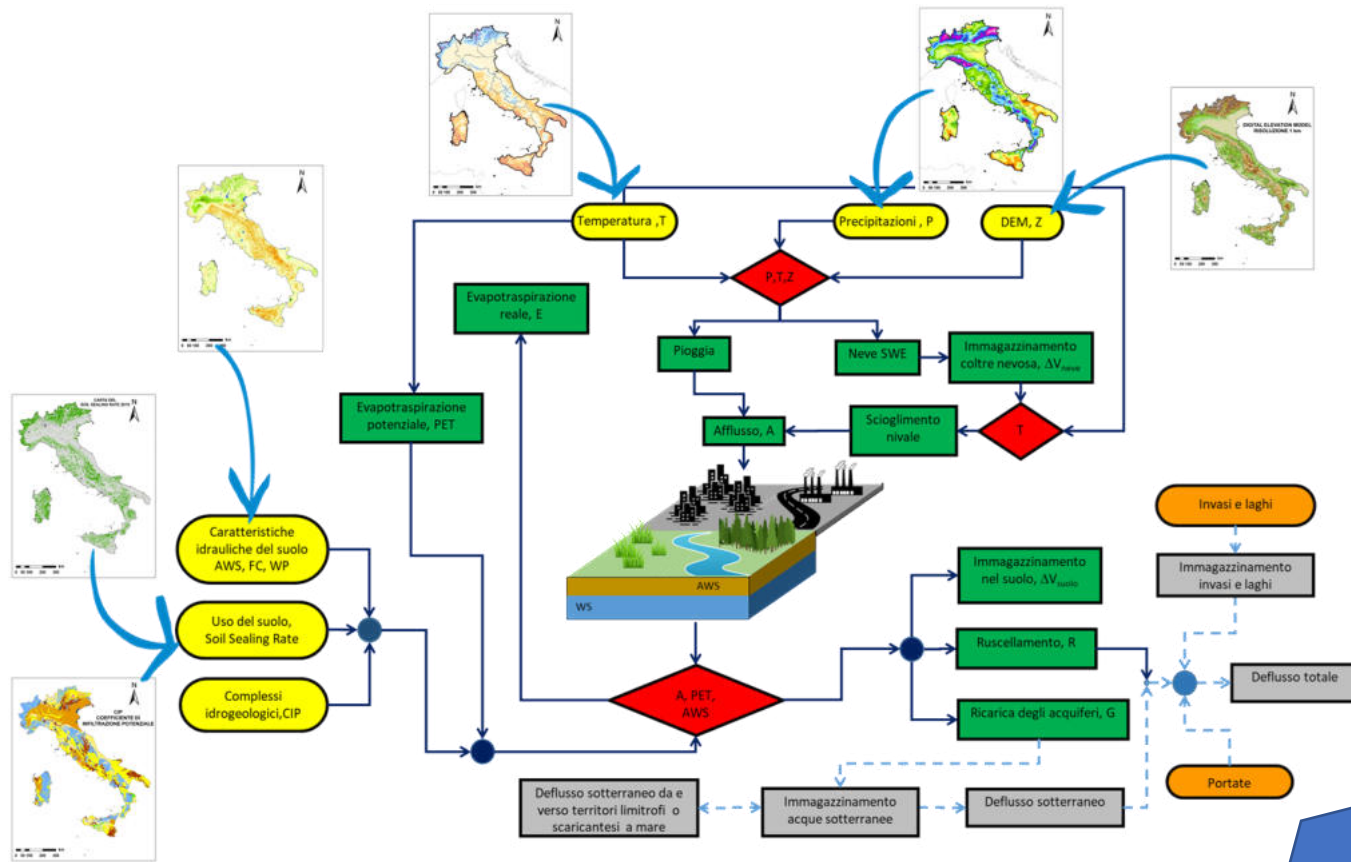
- ❑ Introduzione
- ❑ Materiali e metodi
- ❑ Statistiche e risultati
- ❑ Accessibilità dei risultati
- ❑ Sviluppi futuri
- ❑ 10 anni: evoluzione e diffusione
- ❑ Conclusioni

Introduzione

- ❑ Il bilancio idrologico è lo strumento per la valutazione quantitativa, con riferimento a una specifica scala spaziale e temporale, dei flussi e degli stock naturali nelle diverse forme (liquida, solida, gassosa) in cui si manifesta l'acqua nel suo ciclo sulla terra (sia in superficie, sia al di sotto di essa)
- ❑ Il bilancio idrologico costituisce il presupposto conoscitivo indispensabile all'attività di pianificazione e gestione delle risorse idriche in quanto consente di definire l'equilibrio tra disponibilità naturale, fabbisogni e utilizzi

Materiali e metodi

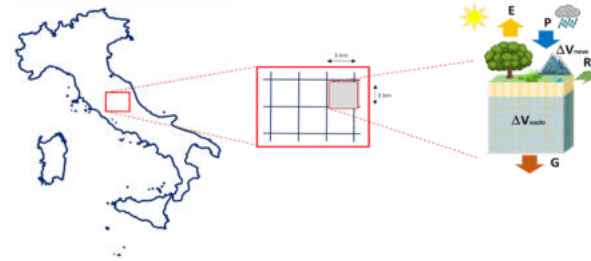
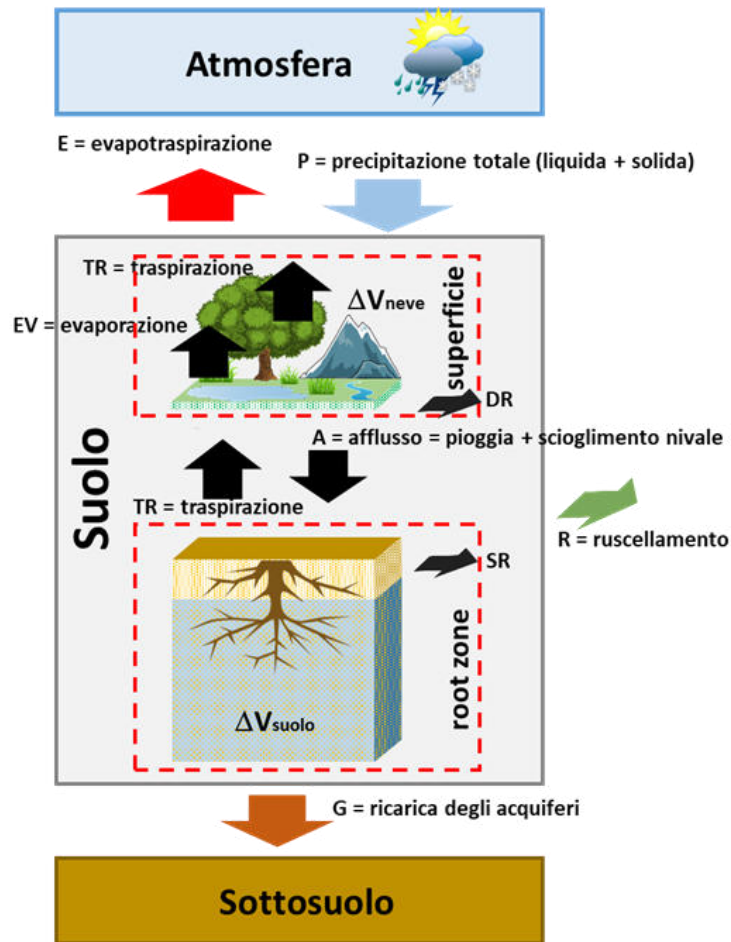
Ciclo idrologico e schema del modello



Bilancio Idrologico “Gis BAsed” a scala Nazionale su Griglia regolare

Schema di bilancio del suolo

MODELLO DISTRIBUITO griglia di 1 km risoluzione, DATUM ETRS89 proiezione LAEA (Lambert Azimuthal Equal Area) EPSG:3035



Internal flow / Risorsa idrica

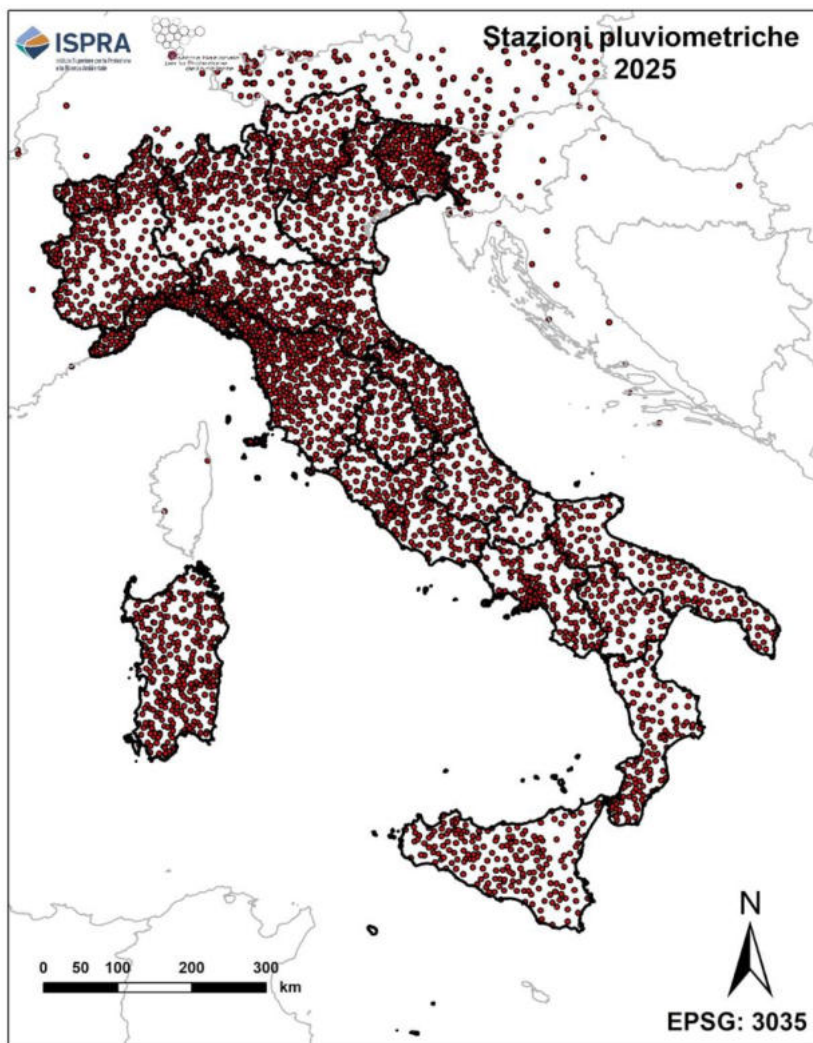
$$P - E = R + G + \Delta V$$

Scala temporale MENSILE

17 VARIABILI CALCOLATE

SIMBOLO (SYMBOL)	VARIABILE IDROLOGICA (HYDROLOGICAL VARIABLE)
TP	Precipitazioni totali (Total Precipitation)
SP	Precipitazione nevosa (Snow Precipitation)
SD	Altezza neve (Snow Depth)
SH	Variazione altezza neve (Change in Snow Depth)
SM	Scioglimento nivale (Snow Melt)
RS	Afflusso totale (pioggia+scioglimento nivale) (Rain + Snow Melt)
PE	Evapotraspirazione potenziale (Potential Evapotranspiration)
PR	Evapotraspirazione potenziale solo su suolo naturale (Potential Evapotranspiration only over natural soil)
AE	Evapotraspirazione effettiva (Actual Evapotranspiration)
IF	Internal flow (RS-AE)
SS	Surplus
DF	Deficit (PR-AE)
GR	Ricarica acquiferi (Aquifer Recharge)
RF	Ruscellamento (Surface Runoff)
WS	Contenuto d'acqua nel terreno profondità 1 m (Soil Water Content at 1 m depth)
DS	Variazione contenuto d'acqua nel terreno profondità 1 m (Change in Soil Water Content at 1 m depth)
TD	Temperatura media (Mean Temperature)

Dati pluviometrici 2025



4251 stazioni pluviometriche

Paese	Fonte	N
Italia	Uffici regionali e delle province autonome di Trento e Bolzano	3831
Albania	ECA&D (European Climate Assessment & Dataset)	4
Croazia	ECA&D (European Climate Assessment & Dataset)	12
Slovenia	ECA&D + ARSO (Agenzia Ambientale Slovena)	71
Austria	ECA&D (European Climate Assessment & Dataset)	264
Germania	ECA&D (European Climate Assessment & Dataset)	14
Svizzera	ECA&D + OASI (Osservatorio Ambientale Svizzera Italiana)	48
Francia	ECA&D (European Climate Assessment & Dataset)	7
TOTALE		4251

Per l'Italia, i dati di precipitazione 2025 provenienti dagli uffici regionali e delle province autonome di Trento e Bolzano sono stati acquisiti tramite:

- Piattaforma nazionale ISPRA di condivisione dati idro-meteorologici HIS CENTRAL (attualmente in versione beta)
- Download diretto dai siti WEB
- Invio tramite e-mail su richiesta

I dati del 2025 dei paesi esteri sono stati acquisiti tramite:

- Download diretto dai siti WEB

I dati sono stati acquisiti a diversi livelli di aggregazione (10 min, orari, giornalieri, mensili) ed è stato necessario riportarli tutti alla medesima aggregazione mensile

Dati termometrici 2025

I dati termometrici 2025 sono stati forniti direttamente in aggregazione mensile e in formato raster dall'Area Monitoraggio qualità dell'aria e climatologia operativa dell'ISPRA, che cura il sistema SCIA

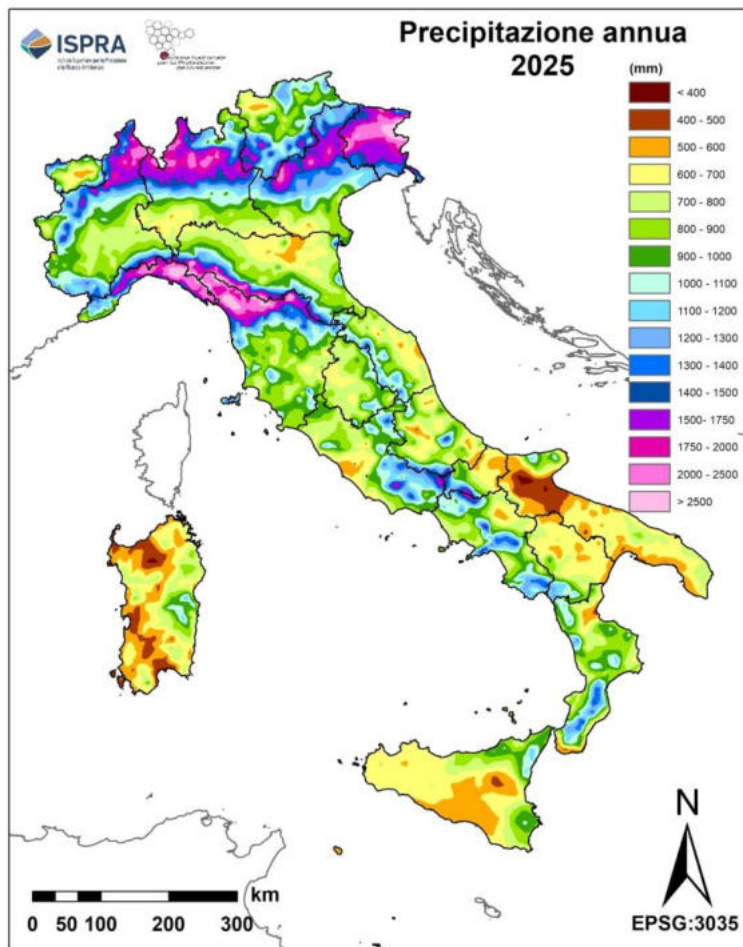


<https://scia.isprambiente.it/>

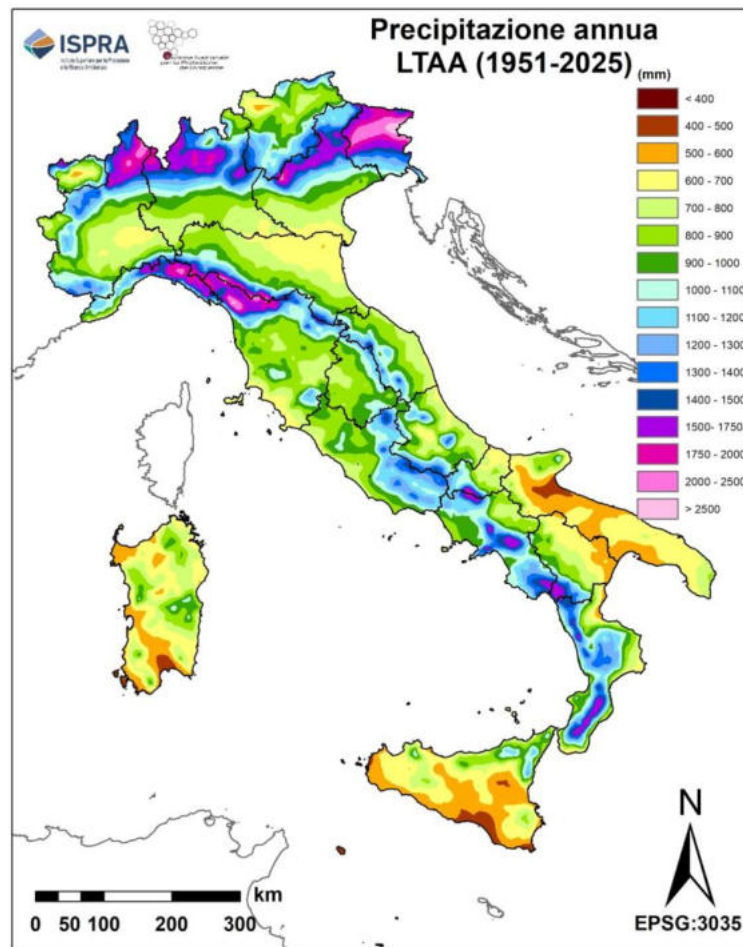


Statistiche e risultati

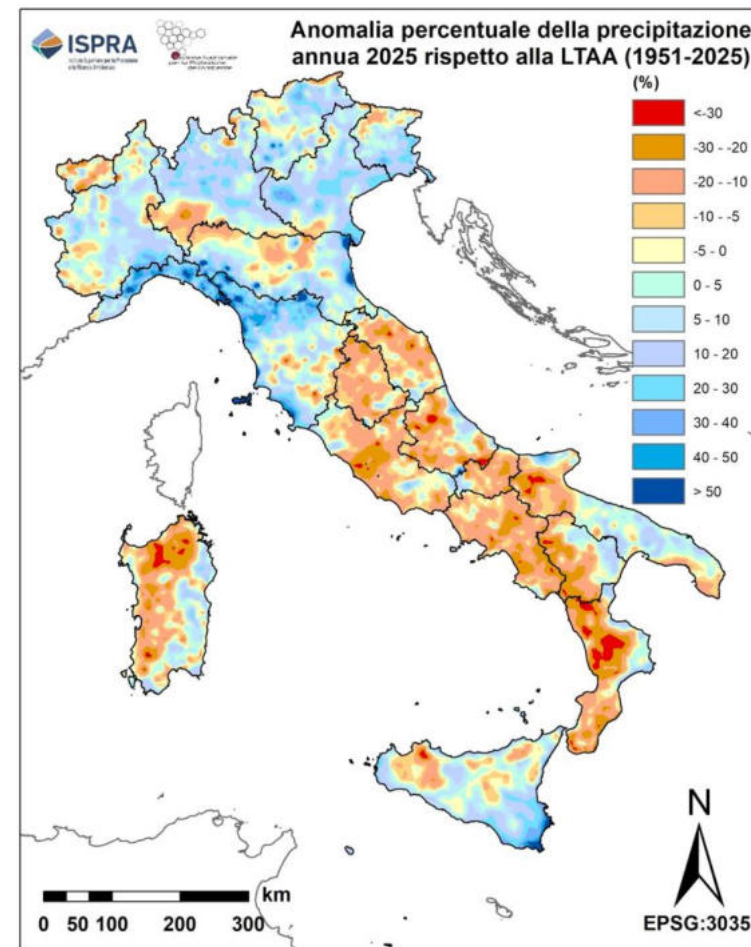
Mappa della precipitazione annua in Italia



291 km³ (963.4 mm)

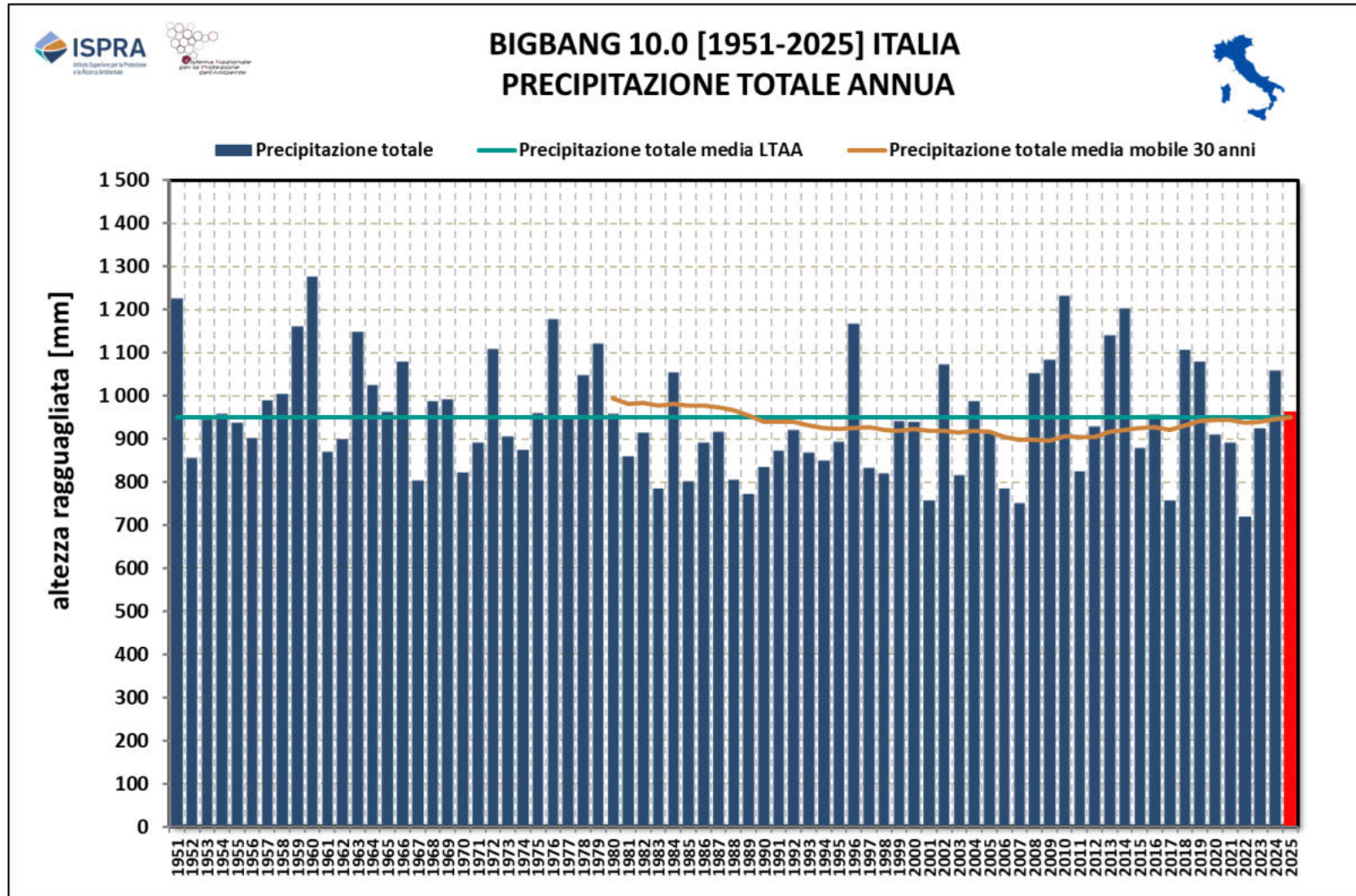


287 km³ (950.9 mm)
285 km³ (944.4 mm) media (1991-2020)

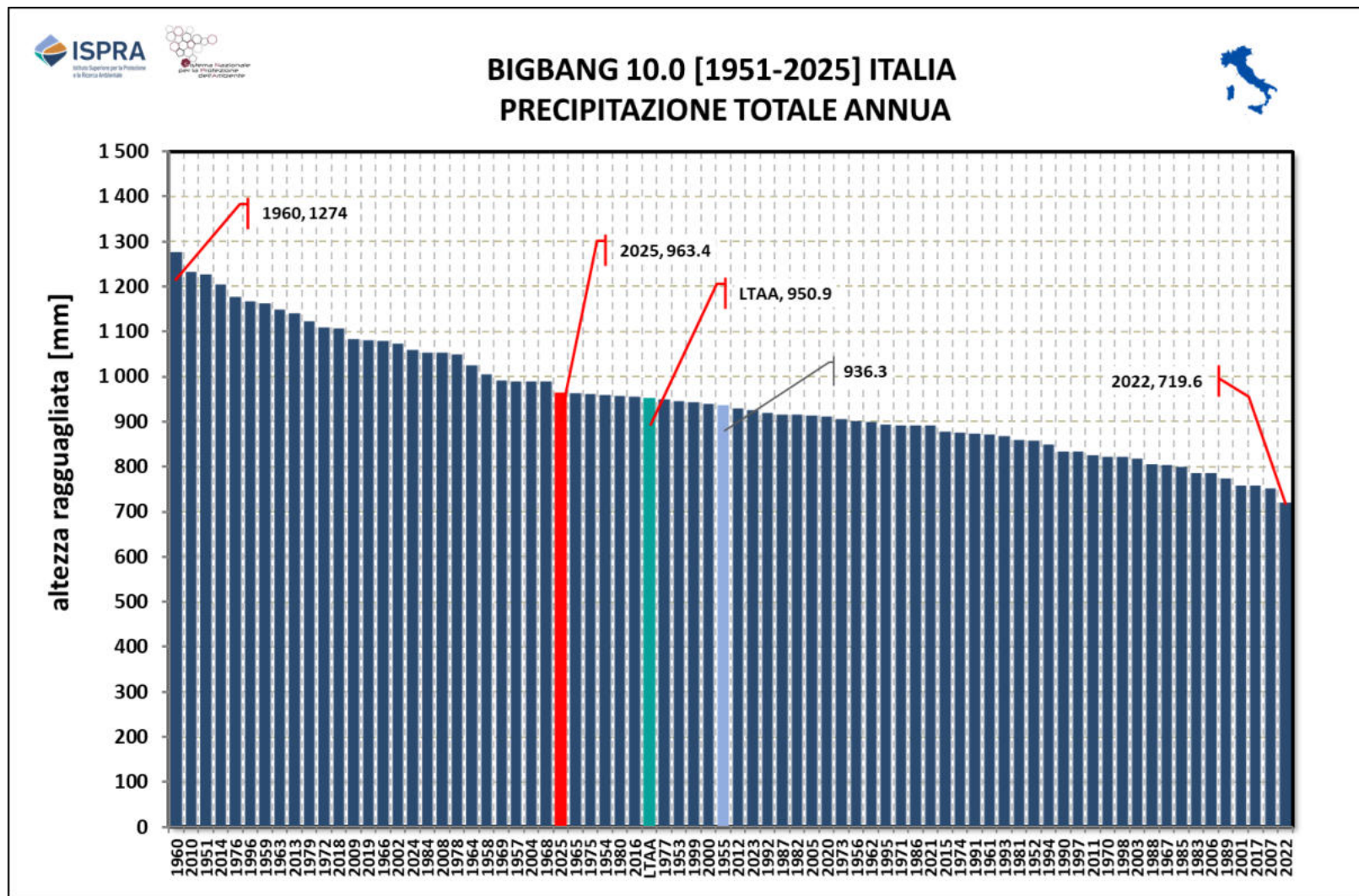


+1.3 %
+ 2% rispetto media (1991-2020)

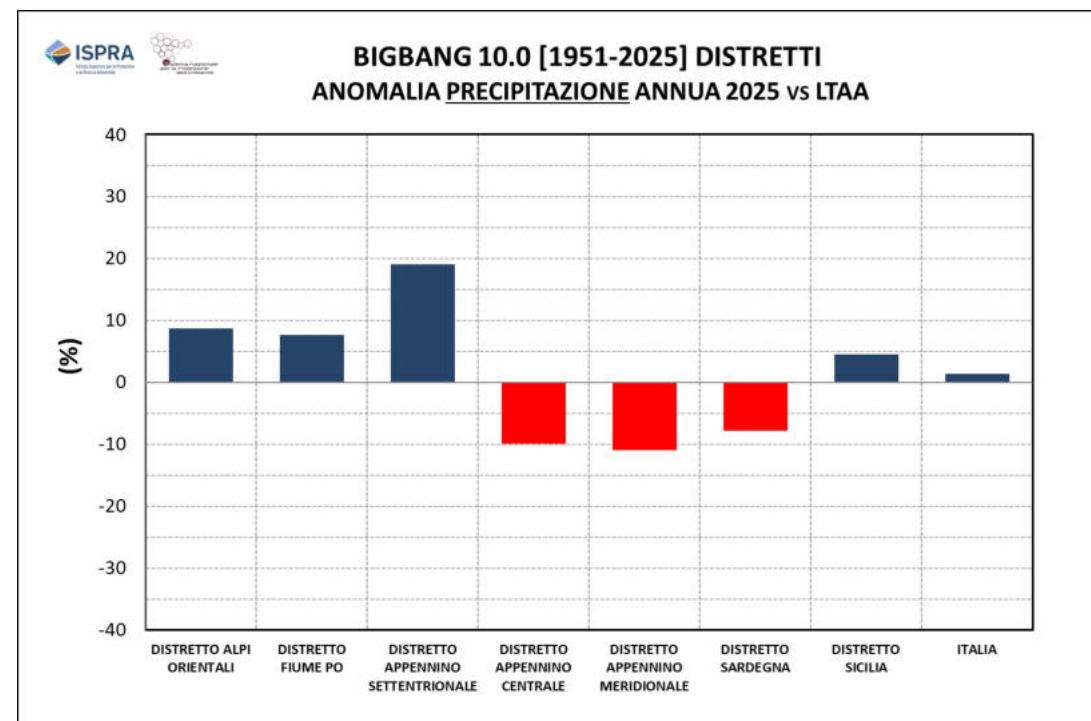
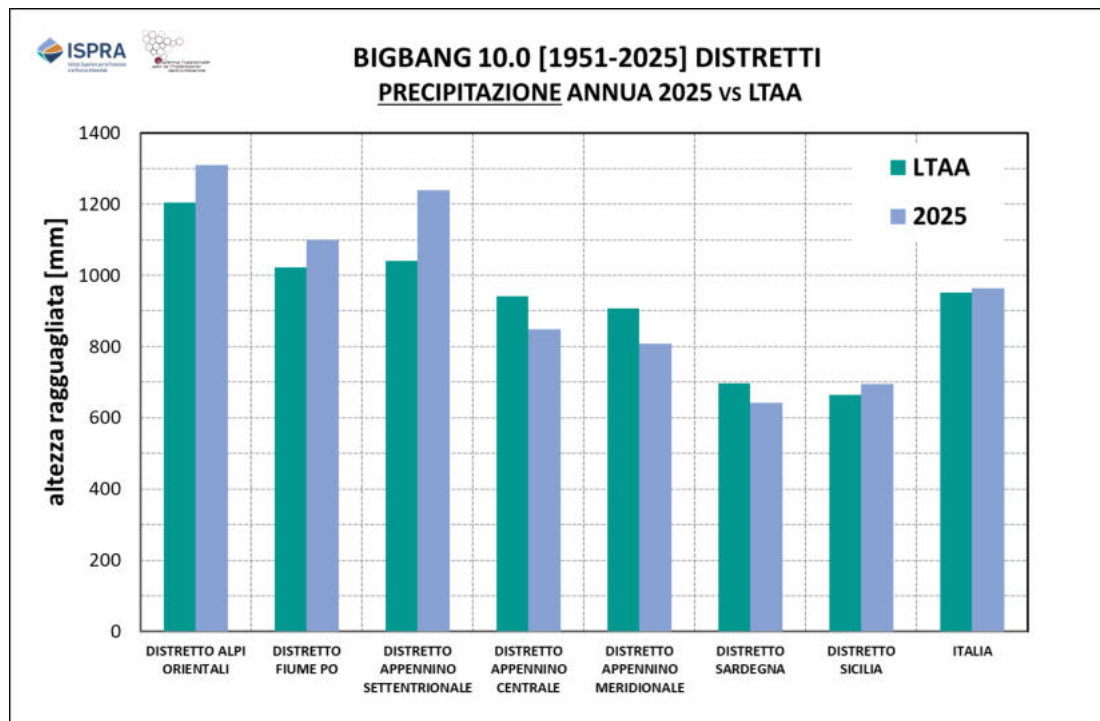
Serie cronologica della precipitazione annua in Italia



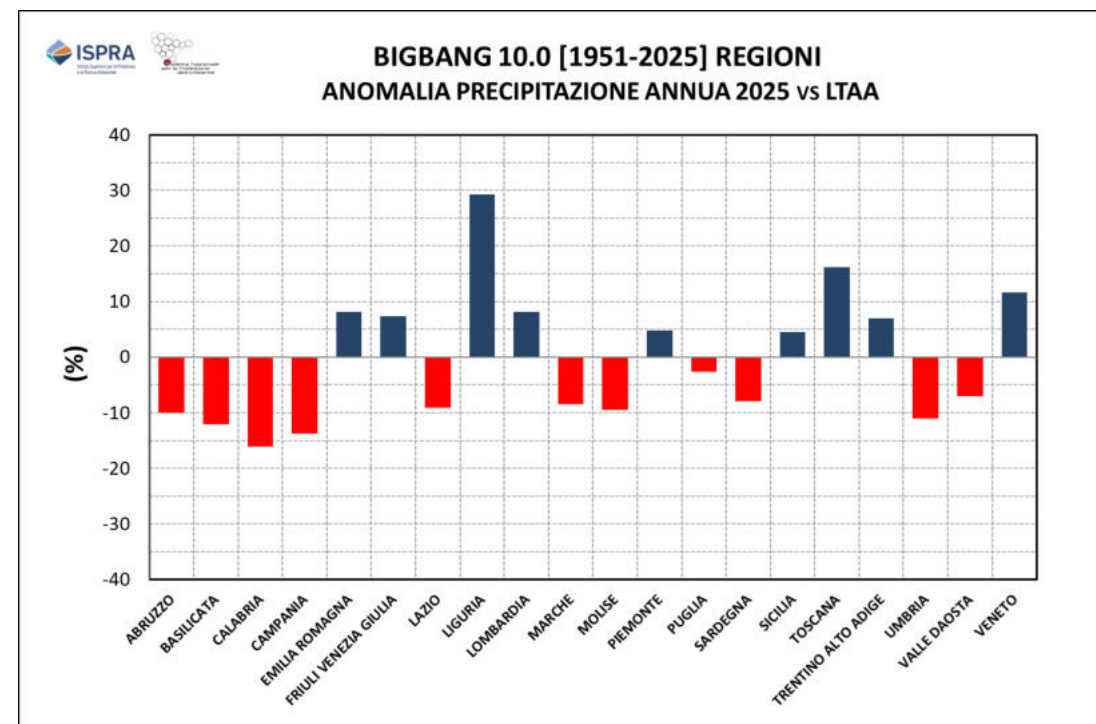
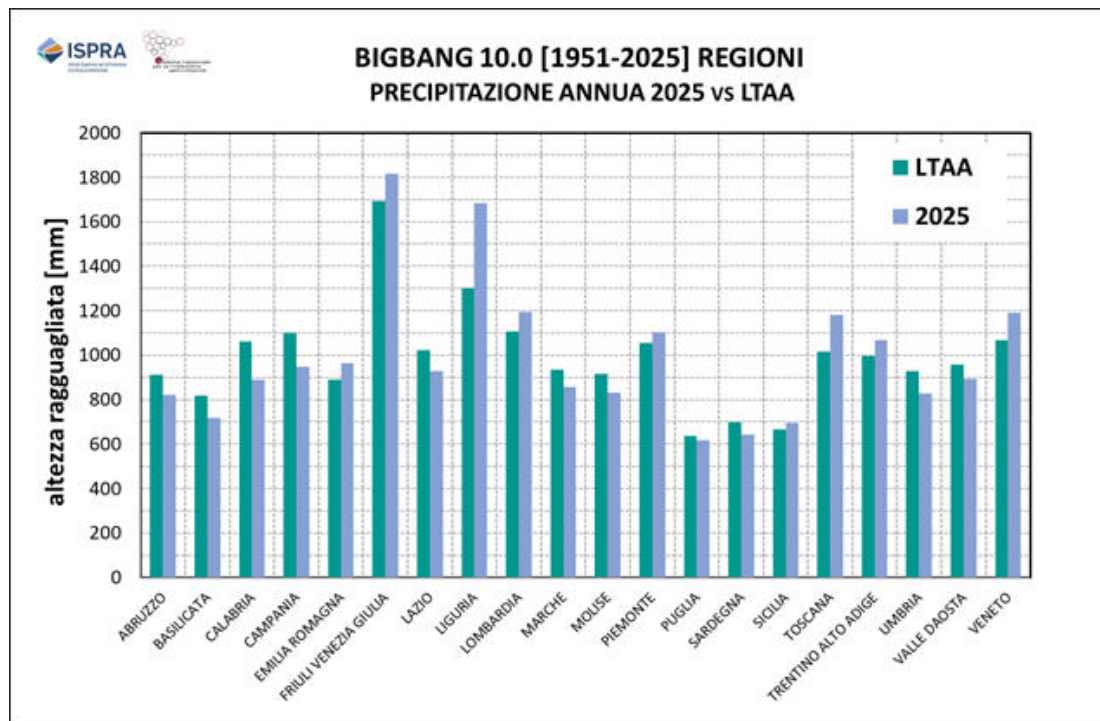
Distribuzione della precipitazione annua in Italia



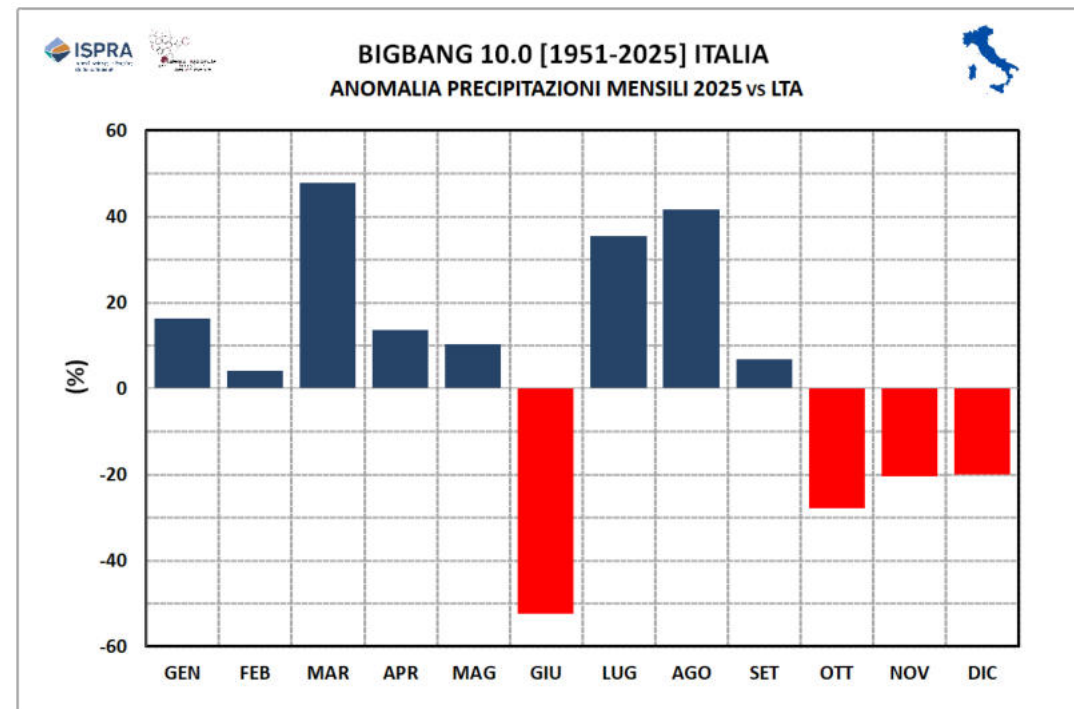
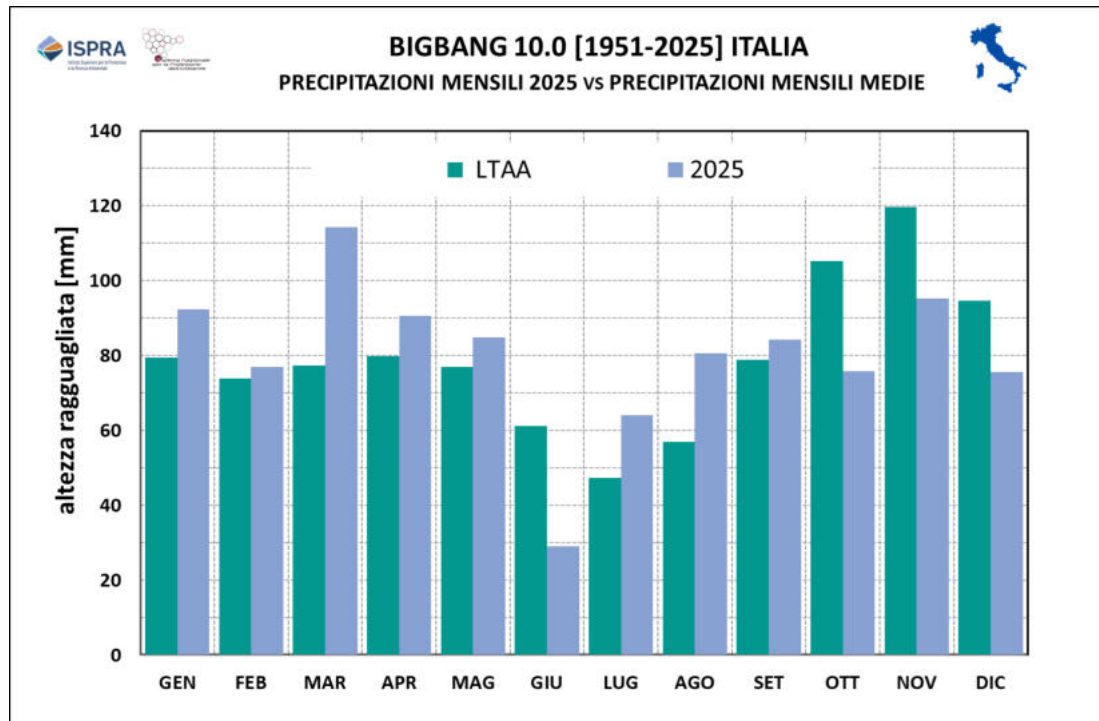
Precipitazione annua per Distretti Idrografici



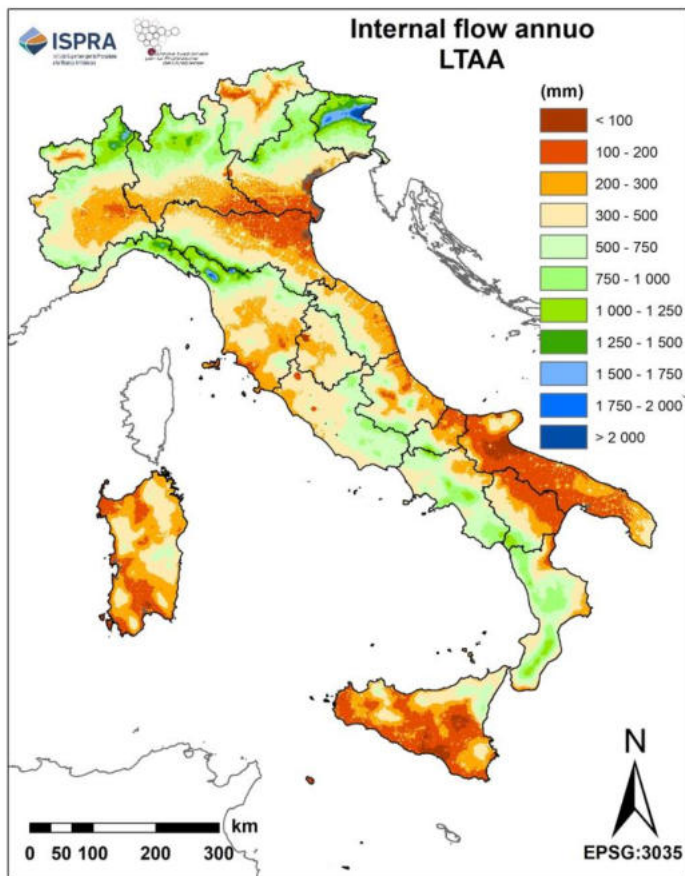
Precipitazione annua per Regioni



Precipitazione mensile in Italia

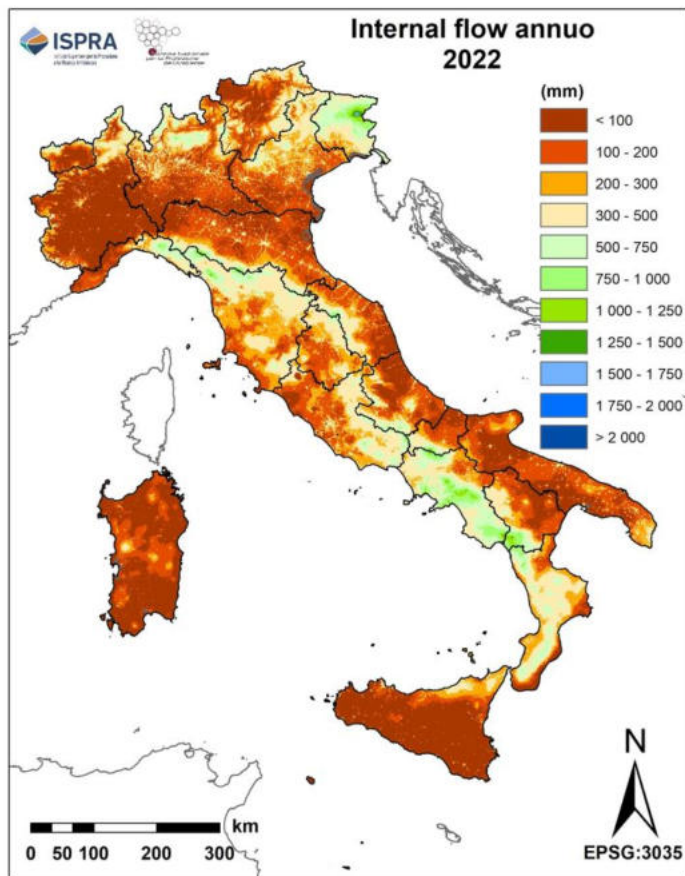


Mappa dell'internal flow in Italia



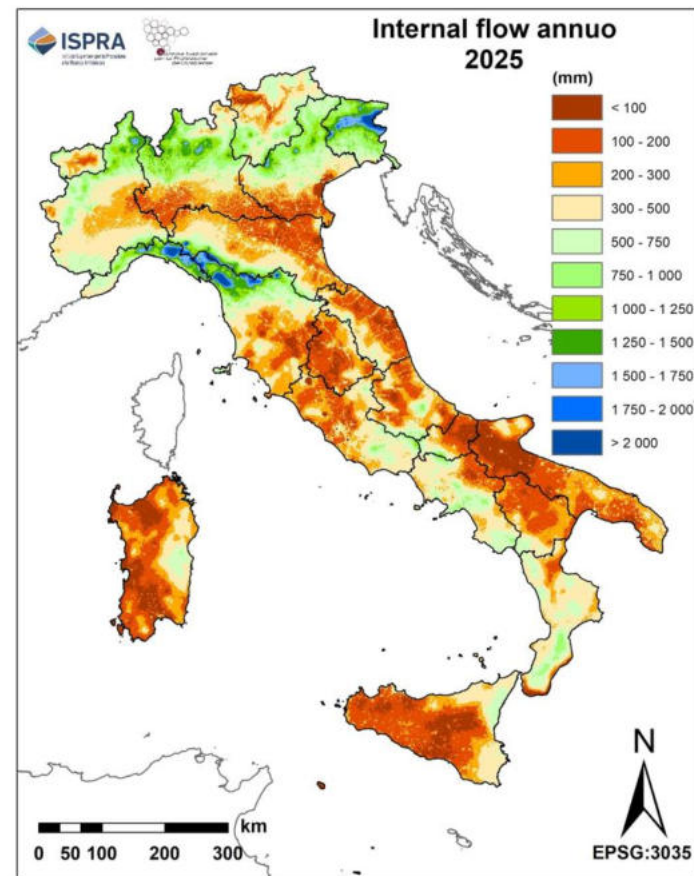
138 km³ (457.2 mm)

134 km³ (442.0 mm) media (1991-2020)



67 km³ (222.7 mm)

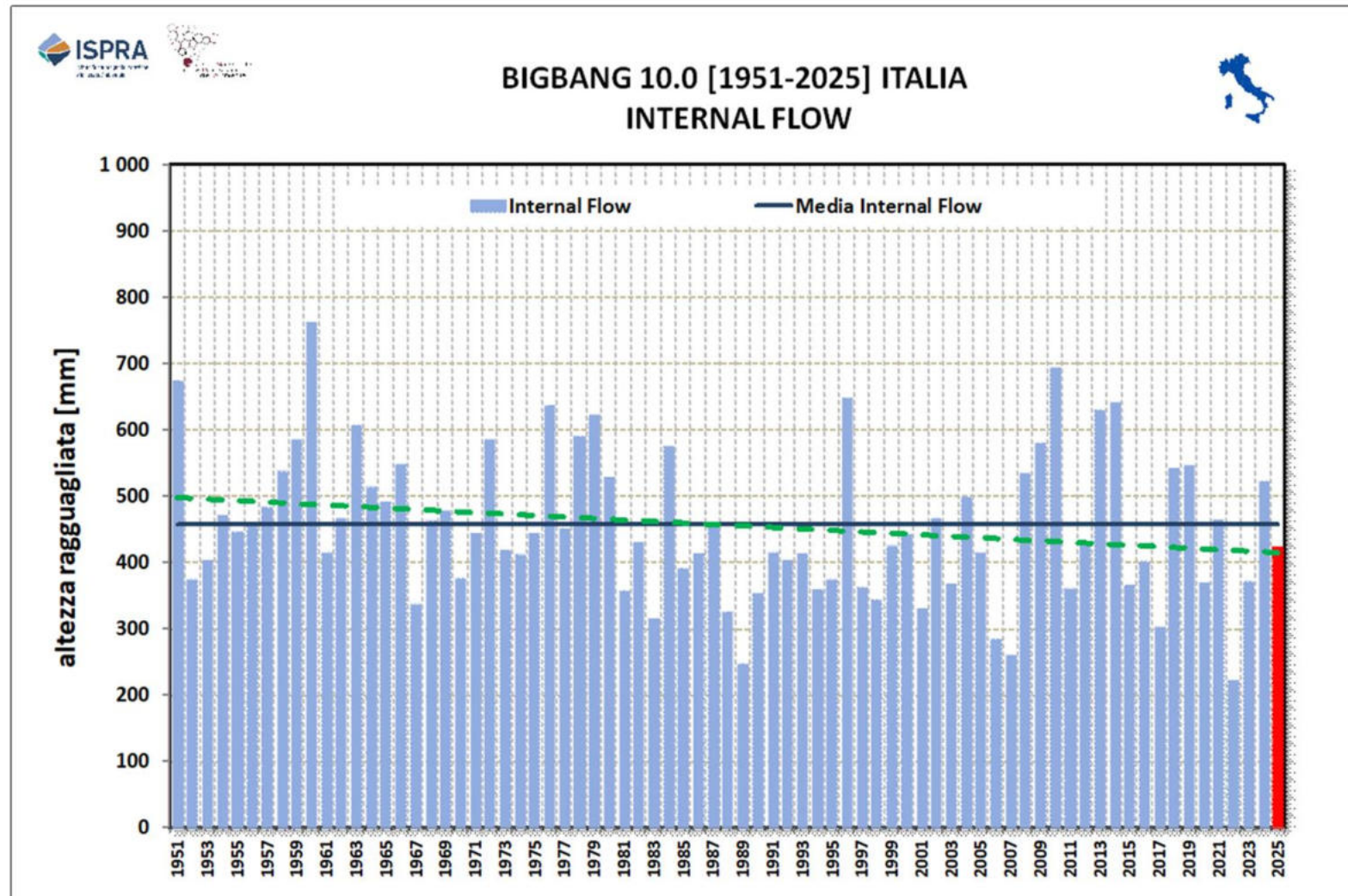
-51% rispetto media
LTAA



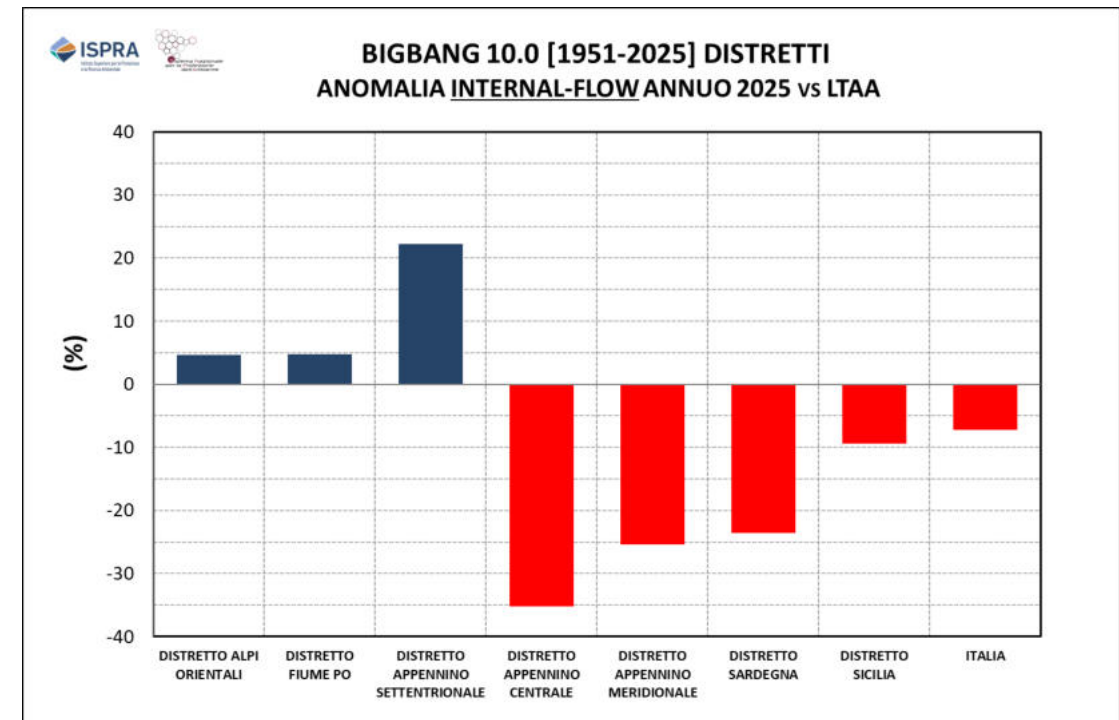
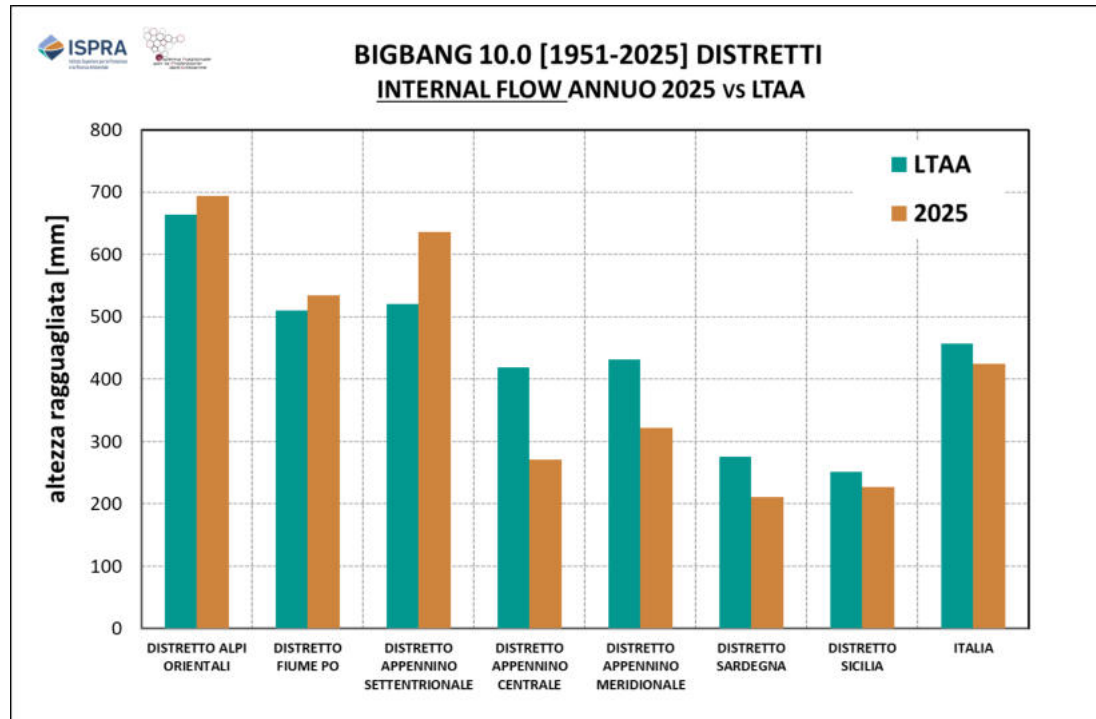
128 km³ (424.1 mm)

-7% rispetto media
LTAA

Serie cronologica dell'internal flow annuo in Italia



Internal flow annuo per Distretti Idrografici



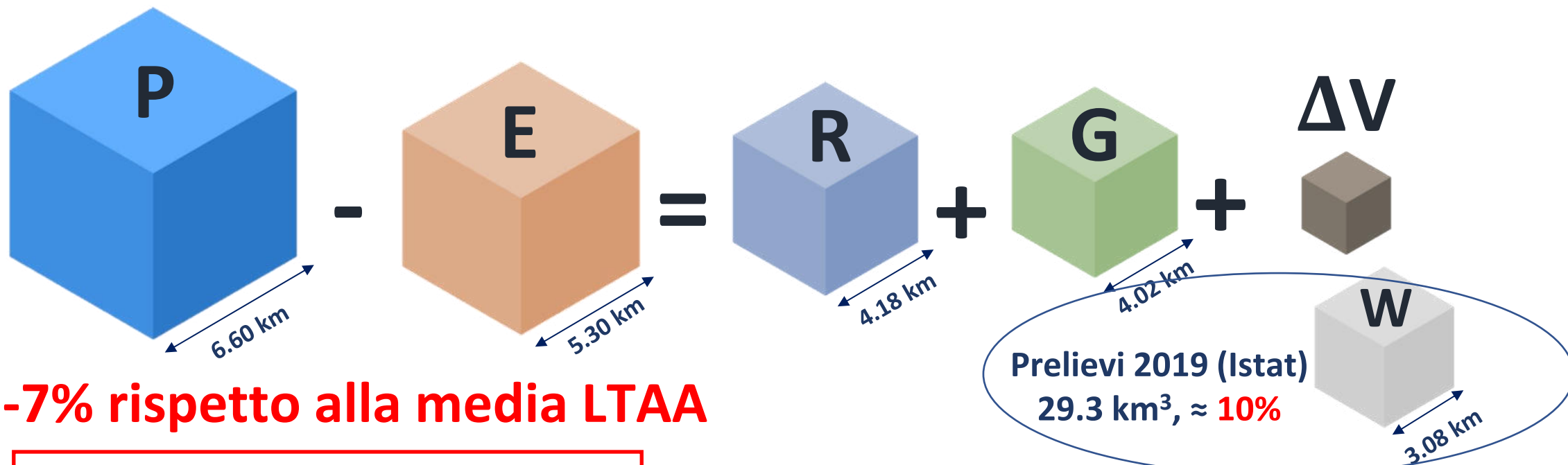
Bilancio idrologico annuo 2025 vs LTAA

1 km³ = 1 miliardo di m³

Lago di Garda ≈ 50 miliardi di m³

LTAA →

Precipitazione totale 287.24 km ³ (950.9 mm) (100.0%)	-	Evapotraspirazione 149.11 km ³ (493.6 mm) (51.9%)	=	Ruscellamento 73.00 km ³ (241.7 mm) (25.4%)	+	Ricarica della falda 65.16 km ³ (215.7 mm) (22.7%)	+	Accumulo -0.07 km ³ (-0.2 mm) (0.0%)
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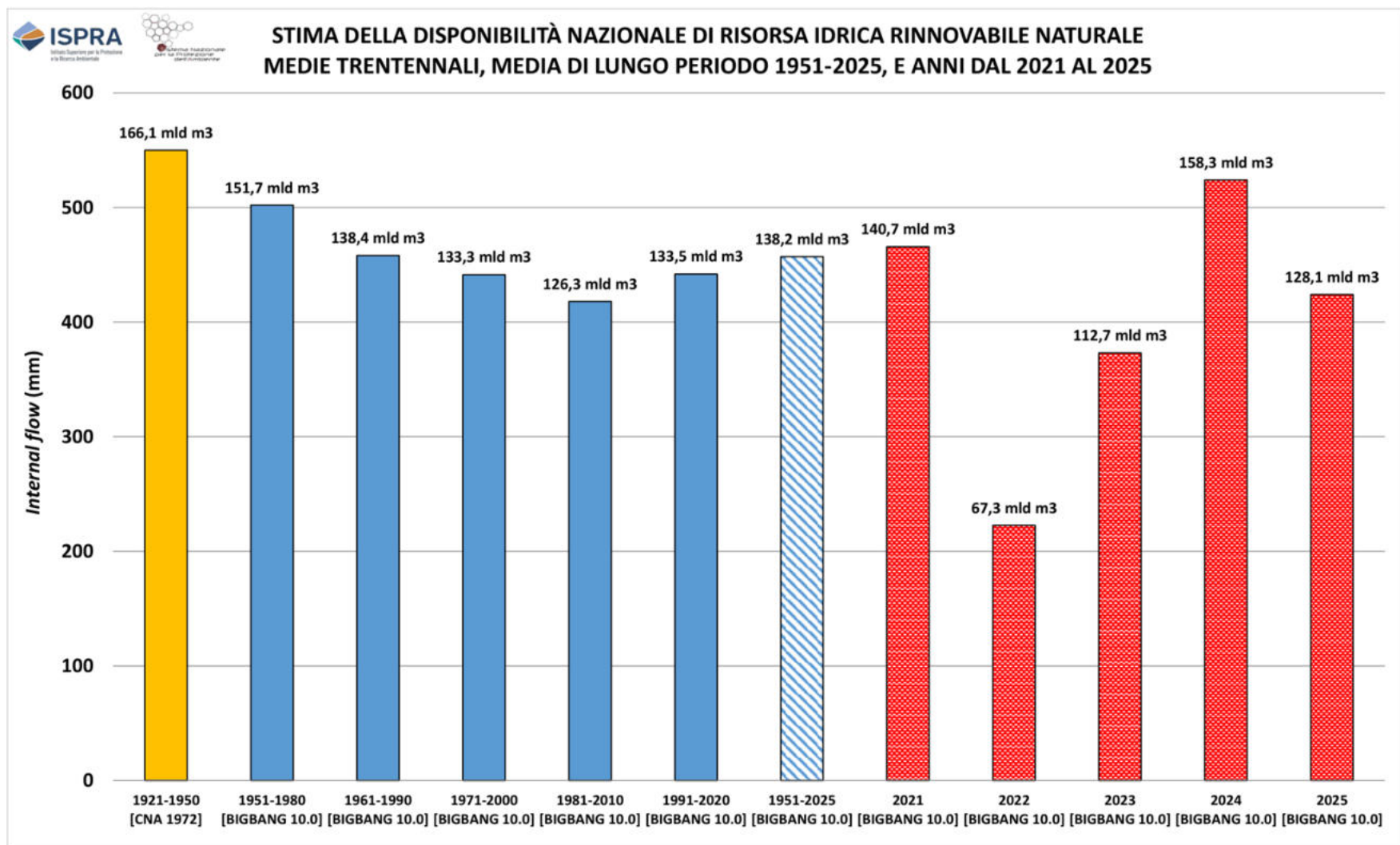


2025 →

Precipitazione totale 291.01 km ³ (963.4 mm) (100.0%)	-	Evapotraspirazione 162.40 km ³ (537.6 mm) (55.8%)	=	Ruscellamento 71.15 km ³ (235.5 mm) (24.5%)	+	Ricarica della falda 55.89 km ³ (185.0 mm) (19.3%)	+	Accumulo 1.08 km ³ (3.6 mm) (0.4%)
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* In rosso: percentuali rispetto alla precipitazione totale

Disponibilità di risorsa idrica rinnovabile annua in Italia



Qualche statistica sul BIGBANG 10.0

- ❑ Numero celle 1km x 1km su cui è calcolato = **306.627**
- ❑ Numero record anni x stazione (solo in Italia) = **219.759**
- ❑ Numero stazioni pluvio mediamente utilizzate per anno = **2930**
- ❑ Densità media stazioni pluviometriche = **1/100 km²**
- ❑ Mappe precipitazione prodotte = **988**
(75 anni+ LTAA) x (12 mesi + anno)
- ❑ Mappe totali prodotte = **16796**
(75 anni+ LTAA) x (12 mesi + anno) x 17 variabili idrologiche
- ❑ Query spaziali per calcolo valori aggregati x territori = **705432**
(75 anni+ LTAA) x (12 mesi + anno) x (Italia + 7 Distretti + 20 Regioni + 2 Province + 12 Compartimenti idrografici ex SIMN) x 17 variabili idrologiche)

SINA.net **GROUPWARE**
BIGBANG Data



Sviluppi futuri

- ❑ **Elaborazione del bilancio 1921-1950** basato sul recupero dell'informazione idrologica degli annali storici mediante il progetto PNRR-RETURN ANNHYDRO
- ❑ **Elaborazione del bilancio sui bacini trans-nazionali** (Isonzo, Ticino, Roja, ecc.) con recupero informazione idrologica e di base dei paesi confinanti
- ❑ **Elaborazione del bilancio su più classi di Land Cover**
- ❑ **Elaborazione del bilancio con aggiornamento mensile** (e non più annuale) con il flusso dati fornito dalla piattaforma HISCentral
- ❑ **Report in inglese**

Evoluzione e diffusione



Un bilancio del Bilancio idrologico: 10 anni

Evoluzione



VERSIONE	PERIODO DI ELABORAZIONE	ANNI DI ELABORAZIONE	RILASCIO	RITARDO (MESI)
0.0	inizio sviluppo 2015			
1.0	1996-2015	20	mar-2017	14
2.0	1961-2016	55	ott-2018	21
3.0	1961-2017	56	ott-2019	21
4.0	1951-2019	69	mar-2021	14
5.0	1951-2020	70	dic-2021	11
6.0	1951-2021	71	dic-2022	11
7.0	1951-2022	72	giu-2023	5
8.0	1951-2023	73	mar-2024	2
9.0	1951-2024	74	mar-2025	2
10.0	1951-2025	75	mar-2026	2

Rapporti interni ISPRA



2021



2023



2024

Rapporti esterni

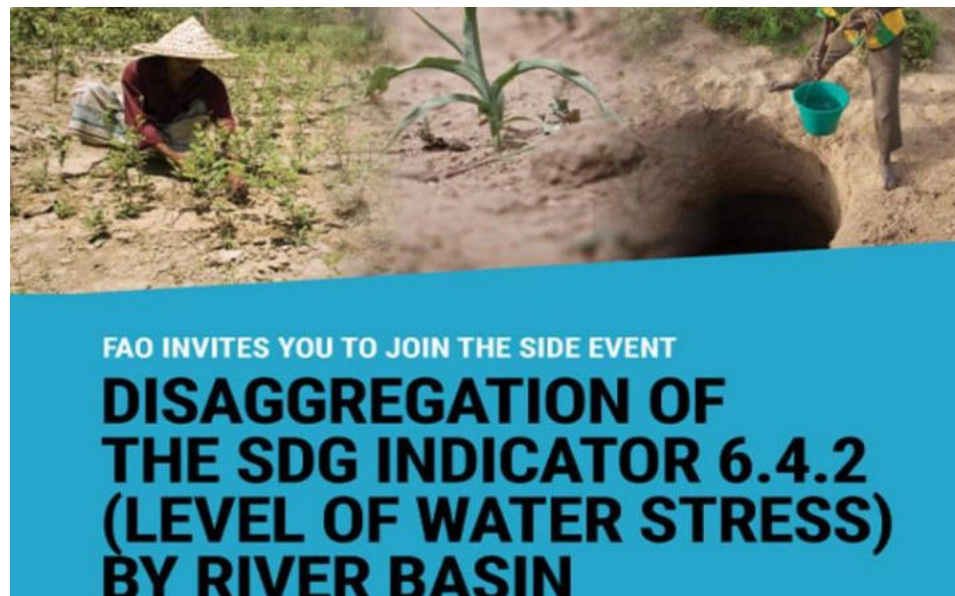


SDG 6.4 MONITORING SUSTAINABLE
USE OF WATER RESOURCES PAPERS

A disaggregation of indicator 6.4.2
"Level of water stress: freshwater
withdrawal as a proportion of
available freshwater resources" at
river basin district level in Italy



2023



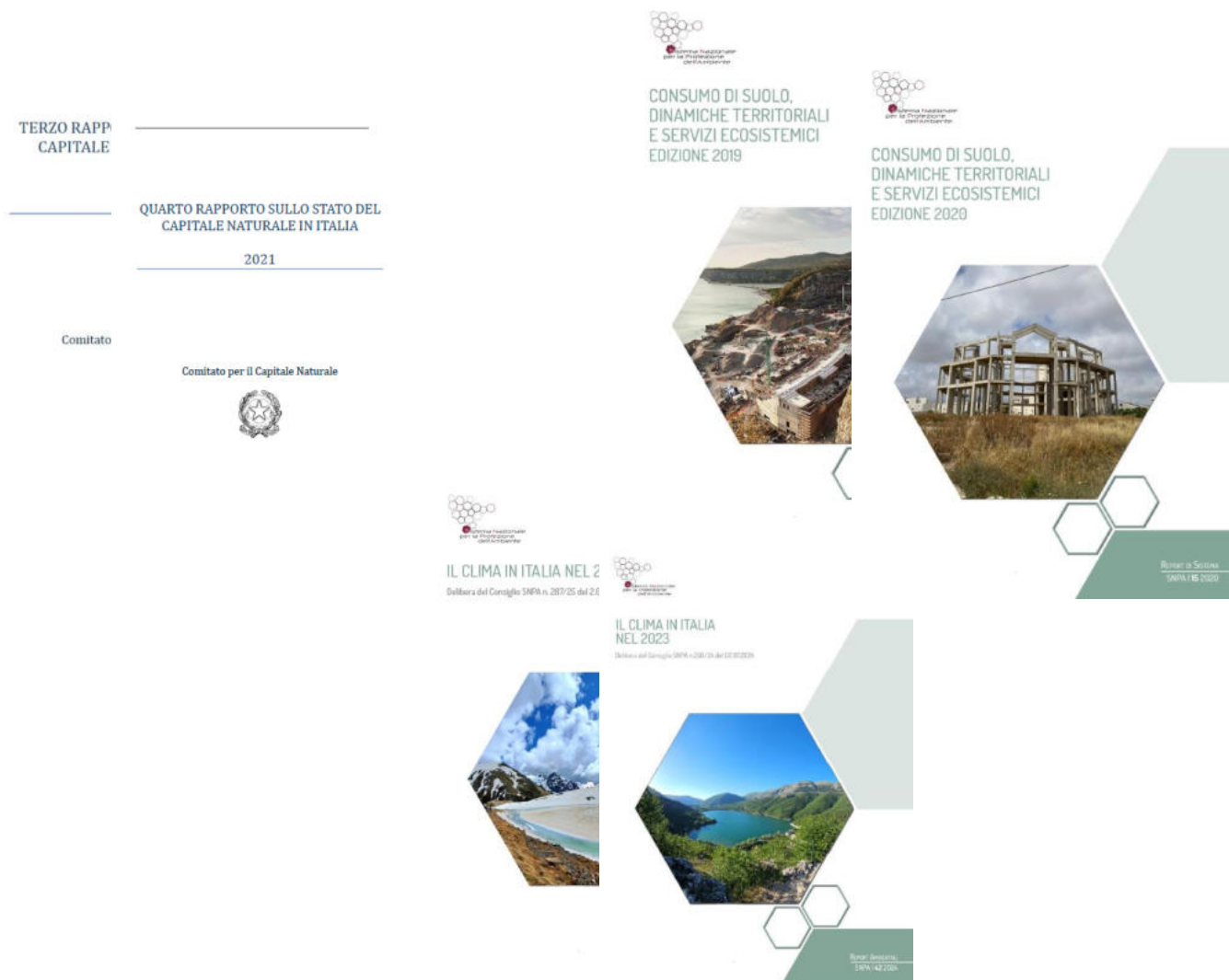
FAO INVITES YOU TO JOIN THE SIDE EVENT

**DISAGGREGATION OF
THE SDG INDICATOR 6.4.2
(LEVEL OF WATER STRESS)
BY RIVER BASIN**

The 24 March in the whole of UN 2023 Water Conference it will be held side event organized by FAO in which the work, carried out by ISPRA in the context of an agreement with FAO and with the support of Istat, on the pilot case "Italy" and the disaggregation of the SDG 6.4.2 indicator at the scale of river basin district.

<https://www.isprambiente.gov.it/en/archive/news-and-other-events/ispra-news/2023/03/disaggregation-of-the-sdg-indicator-6-4-2-level-of-water-stress-by-river-basin>

Contributi a rapporti interni ISPRA



Pubblicazioni su riviste nazionali e internazionali



IDROLOGIA

Giovanni Braca^a, Martina Bussetti^a, Barbara Lastoria^a, Stefano Mariani^a, Francesca Piva^a

IL MODELLO DI BILANCIO IDROLOGICO NAZIONALE BIGBANG: SVILUPPO E APPLICAZIONI OPERATIVE.

La disponibilità della risorsa idrica naturale in Italia dal 1951 al 2020

THE BIGBANG NATIONAL WATER BALANCE MODEL: DEVELOPMENT AND OPERATIONAL APPLICATIONS.

The Availability of Renewable Freshwater Resources in Italy from 1951 to 2020



Rendiconti Lincei. Scienze Fisiche e Naturali
<https://doi.org/10.1007/s12210-018-0075-6>

FORESEEING GROUNDWATER RESOURCES



Evaluation of national and regional groundwater resources under climate change scenarios using a GIS-based water budget procedure

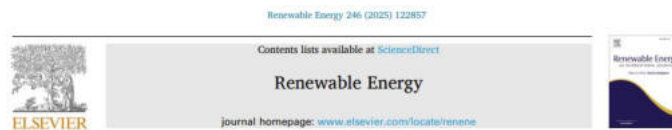
G. Braca¹ · M. Bussetti¹ · D. Ducci² · B. Lastoria¹ · S. Mariani¹

Received: 30 July 2018 / Accepted: 22 December 2018
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Abstract

The present study investigates the impact of climate change on the availability of groundwater resources in Italy and in Campania region (Southern Italy). A 20-year average from 1996 to 2015 of annual water budget components (namely total actual evapotranspiration, surface runoff and aquifer recharge) has been evaluated over a 1-km resolution grid projected considering four climate change scenarios (from the Fifth Assessment Report of the United Nations Intergovernmental Panel on Climate Change) and three different future 20-year time periods (2020–2039, 2040–2059 and 2060–2079). Groundwater balance has been carried out on a yearly basis using the “Nationwide GIS-based regular grid-water budget” procedure, which has been developed by the Italian National Institute for Environmental Research (ISPRA). The different scenarios of groundwater resources have been compared and matched to age of latest historical values related to the period 1996–2015, leading to interesting considerations about the evolution of groundwater resources. Nationwide results have been compared with those of Campania region, in order to highlight the significant differences of climate change impact on groundwater resources at local scale, especially in the context of the increasing aridity of the Mediterranean climate where groundwater resources represent the main source of water for human needs.

Keywords Groundwater · Water resources · Groundwater · Climate change scenarios · Downscaling · GIS



Unravelling the uncertainties in the climate-water-energy interplay: A distributed analysis of the Italian territory

Alessandro Amaranto^{a,*,1}, Leonardo Mancusi^a, Francesca Viterbo^a, Riccardo Bonanno^a, Giovanni Braca^a, Elisabetta Garofalo^a

^a Sustainable Development and Energy Sources Department, RSE Ricerca sul Sistema Energetico, Via R. Rubattino 54, I-20134, Milano, Italy
^b ISPRA—Istituto Superiore per la Protezione e la Ricerca Ambientale (Italian Institute for Environmental Protection and Research), Via Brancati 48, 00144, Roma, Italy

ARTICLE INFO

Keywords:
Hydropower
Climate change
Renewable energy

ABSTRACT

Hydropower is a critical component of Italy's renewable energy portfolio, accounting for 45 % of the nation's renewable electricity generation. However, the future of hydropower is increasingly threatened by climate change, which may alter the availability and distribution of water resources. This study investigates the potential impact of climate change on the availability and distribution of water resources. The study investigates the potential impact of climate change on the availability and distribution of water resources. The study investigates the potential impact of climate change on the availability and distribution of water resources.



Article

Assessment of regional-scale freshwater availability towards sustainable management in the context of climate change

Alessia Flammini^a, Jacopo Dari^{a,1}, Francesco Leopardi^{a,2}, Arash Rahi³, Giovanni Braca^a, Stefano Mariani^a, Renato Morbidelli^a, Carla Saltalippi^a

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² National Research Council, Research Institute for Geo-Hydrological Protection, Via Madonna Alta, 06128 Perugia, Italy

³ Independent researcher; rahi.arash@gmail.com (A.R.)

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* Correspondence: alessia.flammini@unipg.it; Tel.: +39-0755833894

Abstract

Freshwater availability is a key indicator of climate change, with areas like the Mediterranean facing growing water crises due to its faster-than-global-average warming. In central Italy, the Umbria region is experiencing rising temperatures and declining rainfall, making it a prime local case study for assessing the impact of climate change on freshwater availability and its management. In this study, we exploit two well-established, spatially distributed data sets to compute net freshwater (NF) available over the region as the difference between water input, i.e., precipitation, and natural consumption, namely evapotranspiration. To do this, total precipitation and actual evapotranspiration rates derived from BIGBANG v8 and ERA5-Land (European ReAnalysis v5 – Land) are considered.

DOI 10.7343/as-2022-575



ACQUE SOTTERRANEE
Italian Journal of Groundwater
journal homepage: <https://www.acquesotterranee.net/>

2022-AS42-575: 31– 39

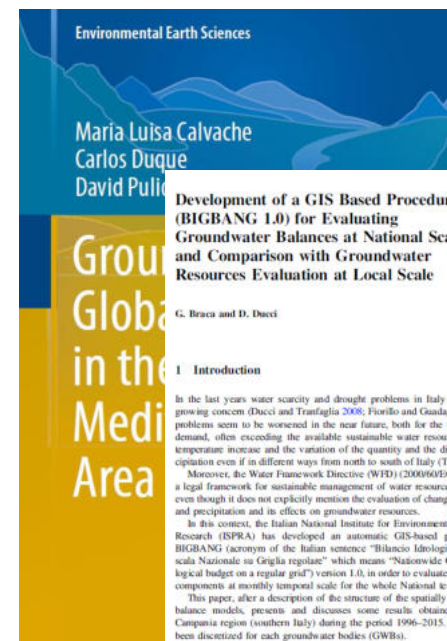
The Nationwide Water Budget Estimation in the light of the New Permeability Map of Italy

La stima del bilancio idrologico nazionale con il contributo della nuova Carta della Permeabilità d'Italia

Braca Giovanni^a, Martina Bussetti^a, Rossella Maria Gafa^b, Gennaro Maria Monti^b, Lucio Martarelli^b, Angelantonio Silvi^b, Francesco la Vigna^b

^a Italian Institute for Environmental Protection and Research, Rome (Italy) - email: giovanni.braca@isprambiente.it (ORCID: <https://orcid.org/0000-0003-4687-0426>); martina.bussetti@isprambiente.it (ORCID: <https://orcid.org/0000-0002-1346-749X>)

^b Department of Geological Survey of Italy, Italian Institute for Environmental Protection and Research, Rome (Italy) - email: rossella.gafa@isprambiente.it (ORCID: <https://orcid.org/0000-0002-0734-8355>); gennaro.monti@isprambiente.it (ORCID: <https://orcid.org/0000-0003-0136-6904>); luccio.martarelli@isprambiente.it (ORCID: <https://orcid.org/0000-0002-8750-3887>); angelantonio.silvi@isprambiente.it; francesco.lavigna@isprambiente.it (ORCID: <https://orcid.org/0000-0003-2727-2017>)



Environmental Earth Sciences

Maria Luisa Calvache
Carlos Duque
David Pulido

Development of a GIS Based Procedure (BIGBANG 1.0) for Evaluating Groundwater Balances at National Scale and Comparison with Groundwater Resources Evaluation at Local Scale

G. Braca and D. Ducci

1 Introduction

In the last years water scarcity and drought problems in Italy have become of growing concern (Ducci and Tranfaglia 2008; Fiorillo and Gaudiano 2012). These problems seem to be worsened in the near future, both for the increase of water demand, often exceeding the available sustainable water resources, and for the temperature increase and the variation of the quantity and the distribution of precipitation even if in different ways from north to south of Italy (Torre et al. 2009).

Moreover, the Water Framework Directive (WFD) (2000/60/EC) has introduced a legal framework for sustainable management of water resources across Europe, even though it does not explicitly mention the evaluation of changes in temperature and precipitation and its effects on groundwater resources.

In this context, the Italian National Institute for Environmental Protection and Research (ISPRA) has developed an automatic GIS-based procedure named BIGBANG (acronym of the Italian sentence “Bilancio Idrologico GIS Based a scala Nazionale su Origine regionale” which means “Nationwide GIS-based hydrological budget on a regular grid” version 1.0, in order to evaluate the water budget components at monthly temporal scale for the whole National territory.

This paper, after a description of the structure of the spatially distributed water balance models, presents and discusses some results obtained in the whole Campania region (southern Italy) during the period 1996–2015. The results have been discretized for each groundwater bodies (GWBs).

Contributi a rapporti esterni

2015

Utilitatis
pro acqua energia ambiente

II RAPPORTO
GENERALE
SULLE ACQUE:
OBIETTIVO 2020

Coordinamento progetto:
Renato Drosiani - UTILITALIA
Adolfo Spasiani - UTILITALIA

Con il sostegno
e la collaborazione di:

UTILITALIA
Impresa acqua ambiente energia

Edizione 2015
Stampa: Publinteria S.r.l. - Roma

Utilitatis
pro acqua energia ambiente

UTILITALIA
Impresa acqua ambiente energia



NOTE TECNICHE
SU CRISI IDRICHE
SICCITÀ E
SERVIZIO IDRICO
INTEGRATO

UTILITALIA
Impresa acqua ambiente energia

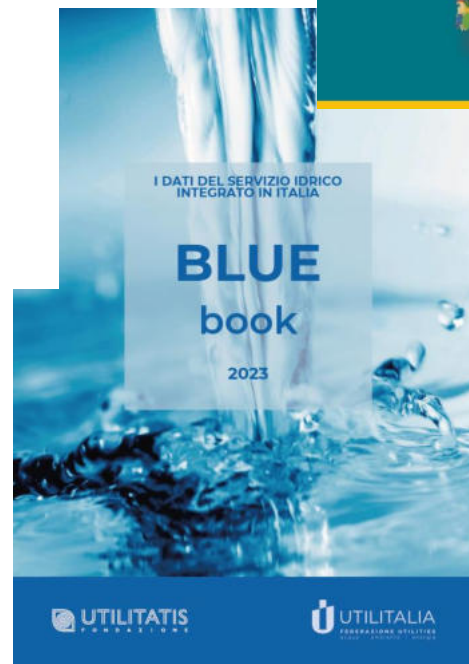
3° RAPPORTO
GENERALE
SULLE ACQUE:
OBIETTIVO 2030

Edizione 2017

2017



2023



2024



2025



Alcune pubblicazioni scientifiche (esterne a ISPRA) nazionali e internazionali che utilizzano il dataset BIGBANG

Journal of Hydrology 661 (2021) 133084

Contents lists available at ScienceDirect

Journal of Hydrology

journal homepage: www.elsevier.com/locate/jhydrol

Research paper

The effects of rising temperatures on flood quantiles in the Italian Alps can be amplified by different catchment morphologies

Giulia Evangelista^{a,*}, Irene Moufoute^a, Pierluigi Claps^a

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Journal of Hydrology 661 (2021) 133084

Contents lists available at ScienceDirect

Journal of Hydrology

journal homepage: www.elsevier.com/locate/jhydrol

Research paper

Model based quantification of salinization dynamics under changing hydrological conditions in the Volturno River (Italy) coastal aquifer

Mattia Giuliano^{a,*}, Abraham Ofot^a, Matteo Postacchini^a, Michel Mastropietro^a, Nicolò Colombani^a

^a Department of Marine, Environmental Sciences and Urban Planning, Politecnico University of Marche, Via Basse Rasse 12, 60137 Ancona, Italy

Journal of Hydrology 661 (2021) 133084

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Journal of Hydrology

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Research paper

Beyond Local Indicators: Integrating Aggregated Runoff into Rainwater Harvesting Potential Mapping

Chedy Mathew Thomas^{a,*}, Irene Postacchini^a, Aldo Fiori^a and Antonio Zarlenga^a

^a Department of Civil, Computer Science and Environmental Technology Engineering, Roma Tre University, Via

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Groundwater drought assessment in a Mediterranean coastal catchment through a multi-index approach

Abedulla Elsaiedy^{a,*}, Lorenzo Villani^a, Estifanos Addisu Yimer^a, Miguel Moreno Gómez^a, Marijke Huysmans^a, Yunes Mogheir^a, Ann van Griensven^a

^a Department of Water and Climate, Vrije Universiteit Brussel, Brussels 1050, Belgium

XXXIV Convegno Nazionale di Idraulica e Costruzioni Idrauliche
Parma, 15-18 Settembre 2024

RICOSTRUZIONE DELLE PORTATE NATURALI COL DATABASE BIGBANG: UN'APPLICAZIONE AL BACINO DEL TEVERE SANTA LUCIA

Irene Pomarico¹, Stefano Cipollini¹, Elena Volpi¹, Antonio Zarlenga¹, Aldo Fiori¹

(1) Università degli studi Roma Tre, Dipartimento di Ingegneria Civile, Informatica e delle Tecnologie Aeronautiche

ASPETTI CHIAVE

- Metodologia basata sul database BIGBANG per il calcolo e la ricostruzione delle portate naturali.
- Formalizzazione di un modello semi-distribuito per la ricostruzione delle portate naturali.
- Applicazione e calibrazione del modello al bacino del Tevere a S. Lucia.

Journal of Hydrology: Regional Studies 63 (2025) 103043

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Journal of Hydrology: Regional Studies

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Research paper

Relevance of the net natural inflow for investigating long-term hydrological changes in a managed lake catchment

Aldo Fiori^{a,*}, Antonio Zarlenga^a, Elena Volpi^a, Irene Pomarico^a, Stefania Passaretti^b, Anna Varriale^b, Claudio Mineo^c

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Journal of Hydrology 645 (2024) 132209

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Journal of Hydrology

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Research paper

Groundwater Impacts and Sustainability in Italian Quarrying: Evaluating the Effectiveness of Existing Technical Standards

Matteo Paolotti^a

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^a Politecnico di Milano, Italy

Adozione indicatori BIGBANG in regolamenti

Nell'allegato A della Delibera 23 dicembre 2025 581/2025/R/idr «Misure di completamento della regolazione della qualità tecnica di cui alla deliberazione dell'Autorità 637/2023/R/idr»

1.1 Nell'Allegato A alla deliberazione 917/2017/R/IDR, al Titolo 2-bis, comma 5-bis.6 dopo le parole "i seguenti indicatori:" sono aggiunte le seguenti:

"1. prioritario nella costruzione delle graduatorie:

a) "Impatto della ricarica rispetto ai consumi del territorio", come di seguito definito per ogni area territoriale di riferimento individuata per l'indicatore M0b:

$$G0.0a^a = \frac{\sum_{(a-3)}^a WEI +}{4}$$

dove:

- WEI+ è l'indicatore Water Exploitation Index Plus, introdotto dalla Commissione Europea nel contesto del reporting previsto ai fini dell'implementazione della Direttiva Quadro Acque 2000/60/CE;
- i valori da utilizzare sono riferiti all'intero anno a o, in mancanza, all'ultima annualità disponibile;

b) "Trend temporale della ricarica", come di seguito definito per ogni area territoriale di riferimento definita per l'indicatore M0b:

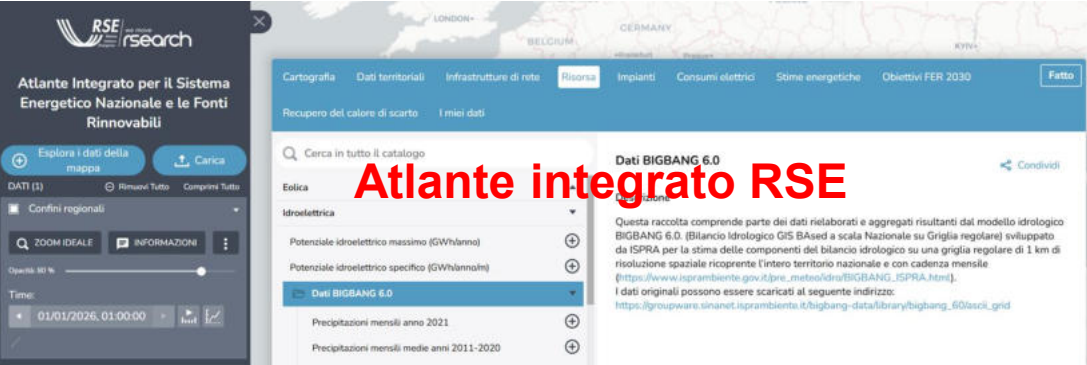
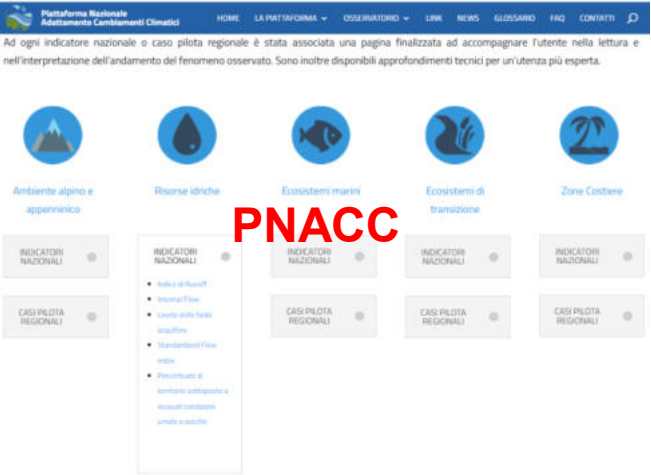
$$G0.0b^a = \frac{\sum_{(a-3)}^a (InternalFlow)}{\sum_{(a-7)}^{(a-4)} (InternalFlow)}$$

dove:

- InternalFlow è pari al valore della omonima componente messa a disposizione dall'Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) attraverso il Modello BIGBANG per il bilancio idrologico a scala nazionale, e determinato quale differenza fra l'Afflusso Totale e l'Evapotraspirazione Effettiva;
- i valori da utilizzare sono riferiti all'intero anno a o, in mancanza, all'ultima annualità disponibile;

2. in subordine:".

Popolamento di banche dati nazionali e europee



Scheda lavoro PSN - STA

Periodo: PSN 2026 - 2028 AGGIORNAMENTO 2027 - 2028

Soggetto Sistan Titolare del lavoro: Ispra - Istituto superiore per la protezione e la ricerca ambientale

Tipologia: Statistica (STA)

Sotto tipologia: SDA

Denominazione: Indicatori del Bilancio Idrologico Nazionale

Codice PSN: APA-00061

TAB 1 - The joint OECD/Eurostat Questionnaire on inland water

Eurostat-OCSE

TABLE 1: Renewable freshwater resources									
Country: IT									
Data collection: 2024									
	Explanatory footnote	2024	Standard flag	Conf. flag	Explanatory footnote	LTAA	Standard flag	Conf. flag	Explanatory footnote
Precipitation		15637.88				2857.69.53			28 LTAA: 1991 - 2020
Internal Flow		155627.93				133454.77			28 LTAA: 1991 - 2020
External inflow from neighbouring territories									
Total outflow									
of which: into marine waters									
of which: into neighbouring territories									
Total renewable freshwater resources									
Recharge into the Aquifer		68510.12				61343.95			28 LTAA: 1991 - 2020

Altre attività che utilizzano BIGBANG

- **Progetto PNRR Spazio IRIDE (Scotti, ESA)**
- **Previsioni stagionali C3S–NCP (Mariani, ISPRA)**
- **Proiezioni climatiche su scenari CC (Mancusi, RSE)**

Conclusioni

- Il modello BIGBANG costituisce uno strumento utile per fornire valutazioni alle diverse scale temporali e spaziali delle componenti del bilancio idrologico e della disponibilità naturale della risorsa idrica, la conoscenza della quale è di fondamentale importanza per definire un utilizzo sostenibile della risorsa
- Ove disponibili previsioni stagionali e a lungo termine di afflussi meteorici e di temperatura, il modello BIGBANG fornisce valutazioni e proiezioni sulla disponibilità futura della risorsa idrica, corredate da opportune stime di incertezza, adatte a predisporre in tempo utile misure di mitigazione e/o di regolazione.
- Allo stato di sviluppo attuale, il modello costituisce una solida base conoscitiva del bilancio idrologico nazionale, che potrà essere ulteriormente migliorata approfondendo gli schemi di calcolo adottati, ampliare la base dei dati utilizzati
- Il modello BIGBANG potrà diventare sempre di più uno strumento operativo a supporto delle attività di gestione sostenibile e adattiva della risorsa, in particolare nelle situazioni di crisi idrica, fornendo in maniera sistematica e in tempi utili informazioni affidabili.



*...all models are
wrong but some are
useful*
George E.P. Box

Grazie per l'attenzione
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