



COMUNE DI CAPRAIA ISOLA
(PROVINCIA DI LIVORNO)

AGGIORNAMENTO DEL QUADRO CONOSCITIVO IN LINEA IDRAULICA
DI SUPPORTO AL PIANO OPERATIVO
DEL COMUNE DI CAPRAIA ISOLA (LI) - INTEGRAZIONI

STUDIO IDRAULICO

ALL
02*

Allegato idrologico

Data emissione:
Febbraio 2019

CODICE
ELABORATO

Anno	Commessa	Progetto	Tipologia	Elaborato n°
2018	046	I	ALL	02*

LIVELLO	Numero	Data	Stesura	Controllo	Approvazione
Prima emissione	01	18/02/2019	ADV	PB	PB

Il Committente
Comune di Capraia Isola

Analisi idrauliche

INGEO

Studio *INGEO*
Ingegneri e Geologi Associati
Via di Tiglio 433 - 55100 Lucca
Telefono 0583 - 48682
Telefax 0583 - 464539
E-mail studio@ingeo.it

Il Progettista
dott. ing. Paolo Barsotti

Il collaboratore
dott. ing. Andrea De Vitis
dott. ing. Francesco Barsotti

Adottato con Delibera C.C. n° 16 del 10.05.2018

Approvato con Delibera C.C. n° 13 del 18.04.2019

NOTE GENERALI DELLA MODELLAZIONE

GENERALITÀ

Il presente allegato integrativo contiene i risultati del modello idrologico costruito tramite il programma di calcolo HEC HMS 4.2.1, prodotto dall' "US Army Corp of Engineers". I parametri idrologici sono stati dedotti dall'analisi GIS dei bacini nelle modalità indicate nella relazione idrologica del settembre 2018 e nella relazione integrativa della presente integrazione. Non cambiando le carte idrologiche, si rimanda allo studio del settembre 2018 per la loro consultazione.

OUTPUT DELLA MODELLAZIONE IDROLOGICA

Le tabelle riportate nel presente allegato contengono gli output relativi a ciascuno degli eventi meteorologici simulati. Per quanto riguarda il significato dei termini anglosassoni si riporta la sottostante legenda:

- **Hydrologic Element:** Elemento idrologico
- **Discharge Peak:** Portata di picco
- **Time of peak:** Istante in cui si verifica il passaggio del picco di piena
- **Volume (mm):** Volume defluito attraverso l'elemento considerato (mm per unità di superficie)
- **Drainage area (kmq):** Estensione dell'area sottesa dall'elemento idrologico

Project: 18 046_HMS Simulation Run: TR030_C_TP0015

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0015

Compute Time: 17feb2019, 10:46:46

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	12.397	30lug2013, 00:24	15.76
VDP MONTE	2.670	19.470	30lug2013, 00:36	15.76
FOSSO DI FRONTE	0.407	6.808	30lug2013, 00:20	15.61
CONFL_01	3.077	20.633	30lug2013, 00:34	15.74
VDP_VALLE	0.534	8.042	30lug2013, 00:22	16.08
CONFL_02	3.611	25.103	30lug2013, 00:26	15.79

Project: 18 046_HMS Simulation Run: TR030_C_TP0030

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0030

Compute Time: 17feb2019, 10:46:49

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	15.629	30lug2013, 00:33	22.81
VDP MONTE	2.670	27.004	30lug2013, 00:45	22.81
FOSSO DI FRONTE	0.407	7.870	30lug2013, 00:29	22.63
CONFL_01	3.077	28.966	30lug2013, 00:43	22.79
VDP_VALLE	0.534	9.717	30lug2013, 00:31	23.20
CONFL_02	3.611	34.967	30lug2013, 00:37	22.85

Project: 18 046_HMS Simulation Run: TR030_C_TP0045

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0045

Compute Time: 17feb2019, 10:46:50

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	15.867	30lug2013, 00:42	27.92
VDP MONTE	2.670	30.740	30lug2013, 00:55	27.92
FOSSO DI FRONTE	0.407	7.574	30lug2013, 00:38	27.73
CONFL_01	3.077	33.683	30lug2013, 00:52	27.90
VDP_VALLE	0.534	9.578	30lug2013, 00:40	28.35
CONFL_02	3.611	40.344	30lug2013, 00:48	27.96

Project: 18 046_HMS Simulation Run: TR030_C_TP0100

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0100

Compute Time: 17feb2019, 10:46:53

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	15.233	30lug2013, 00:51	32.07
VDP MONTE	2.670	32.121	30lug2013, 01:04	32.07
FOSSO DI FRONTE	0.407	7.062	30lug2013, 00:46	31.86
CONFL_01	3.077	35.881	30lug2013, 01:01	32.04
VDP_VALLE	0.534	9.043	30lug2013, 00:48	32.52
CONFL_02	3.611	42.609	30lug2013, 00:59	32.11

Project: 18 046_HMS Simulation Run: TR030_C_TP0115

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0115

Compute Time: 17feb2019, 10:46:54

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	14.418	30lug2013, 00:59	35.62
VDP MONTE	2.670	32.158	30lug2013, 01:13	35.62
FOSSO DI FRONTE	0.407	6.569	30lug2013, 00:54	35.41
CONFL_01	3.077	36.267	30lug2013, 01:10	35.59
VDP_VALLE	0.534	8.477	30lug2013, 00:56	36.10
CONFL_02	3.611	42.920	30lug2013, 01:08	35.67

Project: 18 046_HMS Simulation Run: TR030_C_TP0130

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0130

Compute Time: 17feb2019, 10:46:55

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	13.623	30lug2013, 01:07	38.76
VDP MONTE	2.670	31.555	30lug2013, 01:22	38.76
FOSSO DI FRONTE	0.407	6.133	30lug2013, 01:02	38.53
CONFL_01	3.077	35.792	30lug2013, 01:19	38.73
VDP_VALLE	0.534	7.957	30lug2013, 01:04	39.25
CONFL_02	3.611	42.269	30lug2013, 01:17	38.80

Project: 18 046_HMS Simulation Run: TR030_C_TP0145

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0145

Compute Time: 17feb2019, 10:46:57

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	12.869	30lug2013, 01:15	41.53
VDP MONTE	2.670	30.667	30lug2013, 01:30	41.53
FOSSO DI FRONTE	0.407	5.741	30lug2013, 01:10	41.31
CONFL_01	3.077	34.895	30lug2013, 01:28	41.50
VDP_VALLE	0.534	7.479	30lug2013, 01:12	42.05
CONFL_02	3.611	41.178	30lug2013, 01:25	41.58

Project: 18 046_HMS Simulation Run: TR030_C_TP0200

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0200

Compute Time: 17feb2019, 10:46:58

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	12.248	30lug2013, 01:23	44.11
VDP MONTE	2.670	29.795	30lug2013, 01:38	44.11
FOSSO DI FRONTE	0.407	5.428	30lug2013, 01:17	43.87
CONFL_01	3.077	33.978	30lug2013, 01:36	44.08
VDP_VALLE	0.534	7.091	30lug2013, 01:20	44.63
CONFL_02	3.611	40.069	30lug2013, 01:33	44.16

Project: 18 046_HMS Simulation Run: TR030_C_TP0215

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0215

Compute Time: 17feb2019, 10:46:59

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	11.621	30lug2013, 01:30	46.49
VDP MONTE	2.670	28.759	30lug2013, 01:46	46.49
FOSSO DI FRONTE	0.407	5.124	30lug2013, 01:25	46.25
CONFL_01	3.077	32.858	30lug2013, 01:44	46.46
VDP_VALLE	0.534	6.707	30lug2013, 01:27	47.03
CONFL_02	3.611	38.717	30lug2013, 01:41	46.54

Project: 18 046_HMS Simulation Run: TR030_C_TP0230

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0230

Compute Time: 17feb2019, 10:47:00

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	11.081	30lug2013, 01:38	48.69
VDP MONTE	2.670	27.807	30lug2013, 01:54	48.69
FOSSO DI FRONTE	0.407	4.866	30lug2013, 01:32	48.45
CONFL_01	3.077	31.812	30lug2013, 01:52	48.66
VDP_VALLE	0.534	6.381	30lug2013, 01:35	49.24
CONFL_02	3.611	37.470	30lug2013, 01:49	48.75

Project: 18 046_HMS Simulation Run: TR030_C_TP0245

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0245

Compute Time: 17feb2019, 10:47:01

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	10.603	30lug2013, 01:45	50.76
VDP MONTE	2.670	26.904	30lug2013, 02:02	50.76
FOSSO DI FRONTE	0.407	4.641	30lug2013, 01:40	50.51
CONFL_01	3.077	30.804	30lug2013, 02:00	50.73
VDP_VALLE	0.534	6.093	30lug2013, 01:42	51.32
CONFL_02	3.611	36.276	30lug2013, 01:57	50.81

Project: 18 046_HMS Simulation Run: TR030_C_TP0300

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR030_C_TP0300

Compute Time: 17feb2019, 10:47:02

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	10.231	30lug2013, 01:53	52.93
VDP MONTE	2.670	26.146	30lug2013, 02:09	52.93
FOSSO DI FRONTE	0.407	4.467	30lug2013, 01:47	52.68
CONFL_01	3.077	29.953	30lug2013, 02:07	52.89
VDP_VALLE	0.534	5.870	30lug2013, 01:50	53.50
CONFL_02	3.611	35.255	30lug2013, 02:05	52.98

Project: 18 046_HMS Simulation Run: TR200_C_TP0015

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0015

Compute Time: 17feb2019, 10:47:04

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	18.853	30lug2013, 00:23	24.03
VDP MONTE	2.670	29.649	30lug2013, 00:35	24.03
FOSSO DI FRONTE	0.407	10.332	30lug2013, 00:20	23.85
CONFL_01	3.077	31.435	30lug2013, 00:33	24.01
VDP_VALLE	0.534	12.144	30lug2013, 00:22	24.43
CONFL_02	3.611	38.205	30lug2013, 00:26	24.07

Project: 18 046_HMS Simulation Run: TR200_C_TP0030

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0030

Compute Time: 17feb2019, 10:47:05

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	24.324	30lug2013, 00:33	35.95
VDP MONTE	2.670	42.368	30lug2013, 00:45	35.95
FOSSO DI FRONTE	0.407	12.241	30lug2013, 00:29	35.73
CONFL_01	3.077	45.524	30lug2013, 00:42	35.92
VDP_VALLE	0.534	15.045	30lug2013, 00:31	36.43
CONFL_02	3.611	54.898	30lug2013, 00:37	36.00

Project: 18 046_HMS Simulation Run: TR200_C_TP0045

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0045

Compute Time: 17feb2019, 10:47:06

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	25.052	30lug2013, 00:42	44.95
VDP MONTE	2.670	49.032	30lug2013, 00:54	44.95
FOSSO DI FRONTE	0.407	11.949	30lug2013, 00:37	44.72
CONFL_01	3.077	53.861	30lug2013, 00:51	44.92
VDP_VALLE	0.534	15.052	30lug2013, 00:39	45.48
CONFL_02	3.611	64.386	30lug2013, 00:48	45.01

Project: 18 046_HMS Simulation Run: TR200_C_TP0100

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0100

Compute Time: 17feb2019, 10:47:08

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	24.300	30lug2013, 00:50	52.33
VDP MONTE	2.670	51.619	30lug2013, 01:03	52.33
FOSSO DI FRONTE	0.407	11.269	30lug2013, 00:45	52.08
CONFL_01	3.077	57.755	30lug2013, 01:00	52.30
VDP_VALLE	0.534	14.368	30lug2013, 00:47	52.89
CONFL_02	3.611	68.507	30lug2013, 00:58	52.38

Project: 18 046_HMS Simulation Run: TR200_C_TP0115

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0115

Compute Time: 17feb2019, 10:47:09

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	23.219	30lug2013, 00:58	58.71
VDP MONTE	2.670	52.028	30lug2013, 01:12	58.71
FOSSO DI FRONTE	0.407	10.591	30lug2013, 00:53	58.46
CONFL_01	3.077	58.742	30lug2013, 01:09	58.68
VDP_VALLE	0.534	13.607	30lug2013, 00:55	59.31
CONFL_02	3.611	69.436	30lug2013, 01:07	58.77

Project: 18 046_HMS Simulation Run: TR200_C_TP0130

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0130

Compute Time: 17feb2019, 10:47:09

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	22.092	30lug2013, 01:05	64.39
VDP MONTE	2.670	51.361	30lug2013, 01:20	64.39
FOSSO DI FRONTE	0.407	9.957	30lug2013, 01:01	64.13
CONFL_01	3.077	58.272	30lug2013, 01:18	64.36
VDP_VALLE	0.534	12.863	30lug2013, 01:03	65.00
CONFL_02	3.611	68.778	30lug2013, 01:15	64.45

Project: 18 046_HMS Simulation Run: TR200_C_TP0145

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0145

Compute Time: 17feb2019, 10:47:11

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	21.029	30lug2013, 01:13	69.54
VDP MONTE	2.670	50.217	30lug2013, 01:28	69.54
FOSSO DI FRONTE	0.407	9.396	30lug2013, 01:08	69.27
CONFL_01	3.077	57.161	30lug2013, 01:26	69.51
VDP_VALLE	0.534	12.178	30lug2013, 01:10	70.17
CONFL_02	3.611	67.394	30lug2013, 01:23	69.61

Project: 18 046_HMS Simulation Run: TR200_C_TP0200

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0200

Compute Time: 17feb2019, 10:47:12

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	20.046	30lug2013, 01:21	74.26
VDP MONTE	2.670	48.881	30lug2013, 01:36	74.26
FOSSO DI FRONTE	0.407	8.899	30lug2013, 01:16	73.98
CONFL_01	3.077	55.761	30lug2013, 01:34	74.22
VDP_VALLE	0.534	11.569	30lug2013, 01:18	74.91
CONFL_02	3.611	65.704	30lug2013, 01:31	74.32

Project: 18 046_HMS Simulation Run: TR200_C_TP0215

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0215

Compute Time: 17feb2019, 10:47:13

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	19.176	30lug2013, 01:28	78.70
VDP MONTE	2.670	47.521	30lug2013, 01:44	78.70
FOSSO DI FRONTE	0.407	8.471	30lug2013, 01:23	78.42
CONFL_01	3.077	54.286	30lug2013, 01:42	78.66
VDP_VALLE	0.534	11.031	30lug2013, 01:25	79.36
CONFL_02	3.611	63.937	30lug2013, 01:39	78.76

Project: 18 046_HMS Simulation Run: TR200_C_TP0230

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0230

Compute Time: 17feb2019, 10:47:14

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	18.326	30lug2013, 01:36	82.72
VDP MONTE	2.670	46.075	30lug2013, 01:52	82.72
FOSSO DI FRONTE	0.407	8.059	30lug2013, 01:30	82.44
CONFL_01	3.077	52.712	30lug2013, 01:49	82.68
VDP_VALLE	0.534	10.516	30lug2013, 01:33	83.39
CONFL_02	3.611	62.055	30lug2013, 01:47	82.79

Project: 18 046_HMS Simulation Run: TR200_C_TP0245

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0245

Compute Time: 17feb2019, 10:47:15

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	17.629	30lug2013, 01:43	86.65
VDP MONTE	2.670	44.775	30lug2013, 01:59	86.65
FOSSO DI FRONTE	0.407	7.730	30lug2013, 01:38	86.36
CONFL_01	3.077	51.263	30lug2013, 01:57	86.62
VDP_VALLE	0.534	10.097	30lug2013, 01:40	87.33
CONFL_02	3.611	60.325	30lug2013, 01:54	86.72

Project: 18 046_HMS Simulation Run: TR200_C_TP0300

Start of Run: 30lug2013, 00:00

Basin Model: Bacino

End of Run: 30lug2013, 05:00

Meteorologic Model: TR200_C_TP0300

Compute Time: 17feb2019, 10:47:16

Control Specifications: TC5h_Step1min

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (MM)
AGHIALE	0.952	16.993	30lug2013, 01:50	90.48
VDP MONTE	2.670	43.579	30lug2013, 02:07	90.48
FOSSO DI FRONTE	0.407	7.430	30lug2013, 01:45	90.19
CONFL_01	3.077	49.928	30lug2013, 02:04	90.44
VDP_VALLE	0.534	9.715	30lug2013, 01:48	91.17
CONFL_02	3.611	58.747	30lug2013, 02:02	90.55