

Contents:

1. Resumen	11
2. General Introduction	33
2.1 Research framework	35
2.2 Mediterranean climate	37
2.3 Research objectives and main steps	39
3. Study Site	41
4. Papers	53
4.1 Modelling the non-linear hydrological behaviour of a small Mediterranean forested catchment	55
4.2 Modelling the inorganic nitrogen behaviour in a small Mediterranean forested catchment, Fuirosos (Catalonia)	91
4.3 Sensitivity analysis of three N-models of varying complexity applied in a small Mediterranean forested catchment	129
5. Conclusions	179
5.1 Concluding remarks	181
5.2 Future research lines	189
6. References	191