Fig.13 shows a model of a liquid form with high pollutant concentrations on the high left corner of the analyzed section.

Fig.14: CA Simulated Pollutant Diffusion

Fig.14 above shows the evolution of the pollutant diffusion throughout time until all section under analysis is covered and a constant concentration is reached:

Students are required to interpret the software graphic output of pollutant diffusion and to compare it with other software outputs which can result from changing the initial configurations of the pollutant concentrations. This mathematical model is applied to understand the distribution of pollutants by formulating a 2D diffusion.

4 Conclusion

The CAs have been used in different disciplines successfully. Currently, attention is raised towards the development of models which can carry out complex tasks such as cryptography, image processing and turbulence analysis, among others.

This is the reason why we consider important to introduce CA concepts and applications in engineering teaching, taking as a starting point the study of mathematical models with discrete variable systems.

By introducing experiences as the ones described in the present paper for Algebra and Analytical Geometry, we search for a change of perspective which can see algorithms as a mathematical key activity and computer science as complementary knowledge to run those algorithms and manage their outputs.

Strategy design is highlighted as the outset of the study of mathematical models to solve discrete variable problems integrating the computational mathematics with the technological areas of the engineering curriculum while incorporating new learning styles.

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